



BARBADOS

ANNUAL REPORT

OF THE

Department of Science
and Agriculture

FOR THE YEAR

1947—1948



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DEPARTMENT OF SCIENCE AND AGRICULTURE

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do. do.	W. M. FOSTER.
do. do.	J. E. CLARKE.
Senior Peasant Agricultural Instructor ..	C. A. E. BECKLES, D.I.C.T.A., (Ag.)

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Senior Analytical Assistant	..	..	H. A. JONES.
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Agricultural Department Messenger	..	..	G. BARKER.
Government Laboratory Attendant	..	..	H. A. WHARTON.
Entomological Laboratory Attendant	..	..	A. GITTENS.
Foreman in Charge of Nurseries	..	..	T. O. HOYTE.
Assistant Gardener	..	..	F. A. JORDAN.

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Assistant Livestock Officer	..	..	..	A. D. HERBERT, D.I.C.T.A., (Seconded).
Co-operative Officer	..	..	..	J. M. CAVE, D.I.C.T.A.
Manager, Central Livestock Station	..	..	..	H. E. KIRTON.
Overseer, do. do. do.	..	..	..	J. K. DRAYTON.
Secretary, Barbados Dairy and Stock Breeders' Association	..	..	..	A. G. F. SEALE.
Clerk, C. D. & W. Schemes	..	..	..	E. A. B. DEANE.
Clerical Assistant	..	..	..	T. A. CRAWFORD.
do. do. ..	..	..	..	F. B. TAYLOR.

Scheme D. 235 — Experimental Cotton Spinning Plant.

Manager	..	..	..	N. A. PHILLIPS.
Overseer	..	..	..	A. HAYNES.

Scheme D. 254 — Fishery Officer and Staff.

Fishery Officer	..	..	..	D. W. WILES.
Clerical and Travelling Assistant to Fishery Officer	..	..	..	O. E. MOSELEY.

Dr. Saint was absent from the Colony on ten days' duty leave from the 22nd September to attend meetings of the Advisory Committee of the B.W.I. Central Sugar Cane Breeding Station held in Jamaica. During his absence Mr. M. Halcrow, Deputy Director, was appointed to act as Director of Agriculture.

Mr. F. H. B. Blackburn resigned the post of Chemist on the 30th June. to take up an appointment in Trinidad.

Mr. J. M. Cave, Co-operative Officer, was granted 31 days' duty leave with effect from the 30th June to visit Jamaica with a view to obtaining experience in the working of co-operatives in the field.

Mr. Cave was also granted 6 months and 21 days' duty leave from the 15th September to visit the United Kingdom in connection with a Study Course for Colonial Co-operative Staff at Stanford Hall.

BRITISH WEST INDIES CENTRAL SUGAR CANE BREEDING STATION

ADVISORY COMMITTEE

Chairman — S. J. Saint, C.M.G., O.B.E., M.Sc., Ph.D., F.R.I.C. (London),
Director of Agriculture, Barbados.

Members — H. J. Page, O.B.E., B.Sc., F.R.I.C., F.I.R.I., Principal of the
Imperial College of Tropical Agriculture.

J. C. Muir, O.B.E., B.Sc., Agric. (Glasgow), N.D.A., N.D.D.,
Director of Agriculture, Trinidad.

D. Sturdy, O.B.E., M.A., Director of Agriculture, Jamaica.

H. H. Croucher, B.Sc., A.I.C.T.A., Director of Agriculture, British
Guiana.

R. B. Allnut, B.Sc., Director of Agriculture, Leeward Islands.

C. C. Skeete, B.A., Director of Agriculture, Windward Islands.

H. E. Robinson, Representing the B.W.I. Sugar Association.

Assistant

Botanist — B. deL. Inniss, B.Sc., A.I.C.T.A.

Agricultural Assistant N. L. Foster

„ „ C. D. Gilkes

Statistical Clerk E. L. Jones

BOARD OF AGRICULTURE

The members of the Board of Agriculture appointed for the Legislative
Session 1947-1948 were as follows :—

The Hon. S. C. Thorne, M.L.C., Chairman

„ „ G. D. L. Pile, O.B.E., M.L.C.

„ „ J. D. Chandler, M.L.C.

J. A. Haynes, Esq., B.A., M.C.P.

H. A. Dowding, Esq., M.C.P.

E. L. Ward, Esq., M.C.P.

F. E. C. Bethell, Esq.

S. A. Walcott, Esq., M.C.P.

The Director of Agriculture is an *ex-officio* member of the Board.

REPORT ON THE WORK OF THE DEPARTMENT OF SCIENCE AND AGRICULTURE FOR THE YEAR ENDING 31ST. MARCH

1948

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PART I.	
SUMMARY OF AGRICULTURAL POLICY	
1. The conservation of soil and the maintenance and improvement of soil fertility.	
2. The control of pests and diseases of crops.	
3. The improvement of crop yields by selection and breeding.	
4. The maintenance of a sound animal husbandry industry as an integral part of the farming system.	
5. The development and improvement of the fishing industry.	
6. The encouragement of the production of local food crops, especially green vegetables.	
7. The stimulation of co-operative ventures, particularly amongst small holders.	
8. The development of irrigation in suitable areas.	

PART II.

GENERAL

I. WEATHER CONDITIONS DURING THE YEAR

Detailed climatic data, as recorded at the Meteorological Station at Codrington, St. Michael, are given in Appendix I to this Report. Water is the principal factor limiting growth in Barbados and, as the water supply is almost entirely dependent on rainfall, the monthly average rainfall for the Colony is an important factor to record. The average rainfall for the period November 1946--January 1948, which covers the growing period of the plant cane, compared with the average rainfall for the past one hundred years is set out in Table I.

TABLE I.

Month	Rainfall in Inches	
	Average 1847—1946	Average 1946—1948
November ..	7.78	3.89
December ..	4.80	5.77
January ..	3.37	3.66
February ..	2.11	1.39
March ..	1.94	0.66
April ..	2.33	1.23
May ..	3.19	1.11
June ..	5.31	7.53
July ..	6.21	7.99
August ..	7.26	2.31
September ..	7.66	2.85
October ..	7.77	5.09
November ..	7.78	2.70
December ..	4.80	2.28
January ..	3.37	3.02
Total ..	75.68	51.48

The average monthly rainfall figures for the Island for the fifteen months' period November 1945 to January 1946, when compared with the one hundred year average, show that there was a general shortage of rain over the period August to December. This is the normal wet season with higher temperatures and is the period of the year when the major growth of the cane normally occurs.

II. AGRICULTURAL CROPS

A. SUGAR CANE

(a) Production

The yield of the sugar cane crop reaped in 1947 was the equivalent of 111,232 tons sugar. This was made up of 86,369 tons Vacuum pan sugars, 1,655

tons Muscovado sugar, 7,658,685 wine gallons of Fancy molasses which, equated on the basis of 330 wine gallons of Fancy molasses to the ton of sugar, is the equivalent of 23,208 tons of sugar.

The rainfall during the 1947 calendar year was low and particularly so during the critical growing period August to December. These unfavourable weather conditions resulted in the production for 1948 being estimated at only 80,000 tons sugar, which is far below the production figure for the past few years.

The sugar production in Barbados for the past six years is set out in Table II.

TABLE II.
Sugar Production for the Period 1941—47.

	1941	1942	1943	1944	1945	1946	1947
Vacuum Pan sugars ..	71,226	86,700	132,031	82,819	98,120	111,933	86,369
Muscovado sugar	3,367	2,895	1,242	1,508	1,113	1,377	1,655
Fancy Molasses	25,780	19,438	—	20,175	20,215	20,410	23,208
	100,373	109,033	133,273	104,502	119,448	133,720	111,232

(b) Export of Sugar and Local Consumption

During the year there continued to be a general world shortage of sugar and the Ministry of Food again purchased the colony's entire exportable surplus of sugar.

The export of sugar is still controlled by the Sugar Production and Export Control Board, of which the Director of Agriculture is Chairman, and care is exercised to make sure that the requirements of the local market are provided for.

The position with regard to local consumption and export during the years 1945—46 and 1946—47 may be summarised as follows:—

Estimated stocks in hand	at 1st Sep. 1945	—	at 1st Sep. 1946	—
	tons	tons	tons	tons
Fancy molasses for export	5,574		4,584	
Sugar for export	8,908		39,745	
„ „ local consumption	7,644	22,126	9,419	53,748
Production	1946 crop	133,720	1947 crop	111,232
		155,846		164,980
Estimated stocks in hand	at 1st Sep. 1946	—	at 1st Sep. 1947	—
	tons		tons	
Fancy molasses for export	4,584		5,997	
Sugar for export	39,745		19,625	
„ „ local consumption	9,419	53,748	4,329	29,951
		102,098		
Total exports as per Customs returns for the quota year:	1945—46		1946—47	
Fancy molasses	20,740		20,820	
Sugar	69,313	90,053	109,701	130,521
Difference representing sugar left in the hands of commission merchants for local consumption ..		12,045		4,508

By the end of December, 1947, most of the sugar had been exported.

(c) Fancy Molasses

The Barbados Fancy Molasses Industry continues to be under the control of the Fancy Molasses Control and Marketing Board, of which the Director of Agriculture is Chairman.

Shipments of Fancy molasses were made regularly during 1946 so that little Fancy molasses remained in stock for export at the end of December, 1946. The Fancy Molasses Control and Marketing Board allocated some 67,400 puncheons equivalent for production during 1947 for export. Of this quantity some 32,000 puncheons were manufactured by small fancy molasses plants and the remainder by vacuum pan factories.

For the year 1948, the Fancy Molasses Control and Marketing Board has allocated some 60,700 puncheons of fancy molasses for production for export. The reduction below the 1947 crop figure in the quantity of fancy molasses allocated for export is due to the anticipated short crop. Of the quantity of fancy molasses allocated for production for export, it is expected that small fancy molasses plants producing to capacity will manufacture about thirty-three per cent. while the remainder will be produced by vacuum pan factories equipped for producing fancy molasses.

(d) Establishment of certain special funds for the benefit of the Sugar Industry and the welfare of the workers.

In fixing the price to be paid to the B.W.I. Colonies for 1947 sugar for export to the United Kingdom and Canada, the Ministry of Food included in the price the sum of £2. 15. 0. per ton. It was agreed, by the parties concerned, that this £2. 15. 0. per ton should go towards the establishment of certain special funds for the benefit of the Sugar Industry and the welfare of labour engaged in the Industry. The special funds are :—

- (1) A Capital Rehabilitation Reserve Fund — the purpose of which is to provide a source of funds to meet in part the cost of major renewals and improvements of machinery and equipment.
- (2) A Price Stabilization Reserve Fund — the purpose of which is to provide a reserve which can be utilized, if necessary, to mitigate the adverse effect of a reduction in the price of sugar.
- (3) A Labour Welfare Fund—the purpose of which is to provide funds to meet the cost of capital works for improvement of the welfare of labourers engaged in the Sugar Industry.

A Bill intituled the Sugar Industry (Rehabilitation, Price Stabilization and Labour Welfare) Act, 1947, was enacted by the local Legislature to provide for the implementation of this agreement and the administration of the special funds. The funds are administered as follows:—

- (1) The Capital Rehabilitation Reserve Fund is administered by the Sugar Industry Capital Rehabilitation Reserve Board, of which the Director of Agriculture is Chairman.
- (2) The Price Stabilization Reserve Fund is administered by the Sugar Industry Price Stabilization Reserve Board, of which the Director of Agriculture is Chairman.
- (3) The Labour Welfare Fund is administered by the Governor-in-Executive Committee.

(e) Acreage under Cane

Under the Sugar Cane Census Act, 1937—31, it is compulsory for all landholders with more than ten acres of land to make a return to the Department of Agriculture showing the acres of cane, and the various varieties to be reaped during the ensuing crop season.

The result of the census for the 1948 crop is presented in Table III, together with the corresponding figures for the years 1940 to 1947, inclusive.

As a result of the recent surveys the acreage of cane grown by smallholders is estimated at 7,700 acres.

TABLE III.

Acreage of sugar cane reaped in the years 1940-1948.

Year	ACREAGES							Small Hol- ders esti- mated	Total
	Plantations								
	Plant Canes	First Ratoons	Second Ratoons	Third Ratoons	Fourth Ratoons	Fifth Ratoons			
1940	15,618.12	11,810.83	5,598.74	1,518.73	173.65	5.00	7,000	41,725.07	
1941	14,059.36	11,846.46	6,580.47	1,942.74	237.05	5.00	7,000	41,671.08	
1942	15,023.77	9,928.64	5,651.64	2,278.44	348.13	11.75	7,000	40,242.37	
1943	15,374.95	10,004.44	3,629.84	1,235.49	293.74	6.86	7,000	37,545.32	
1944	14,144.22	10,557.28	4,203.08	814.51	72.82	4.50	7,000	36,796.41	
1945	14,551.53	9,744.58	4,756.20	865.70	52.02	1.34	7,000	36,971.37	
1946	14,056.25	11,614.50	5,578.25	1,817.50	51.25	6.00	7,000	40,123.75	
1947	13,365.25	11,569.00	6,501.00	1,771.50	257.25	2.25	8,000	41,466.25	
1948	13,480.75	10,614.00	6,281.00	2,126.75	255.50	28.00	7,700	40,486.00	

The reduction of the acreage under sugar cane from the year 1942 onwards was due to the compulsory increased planting of provision crops under the Local Food Production (Defence) Control Order, 1942, No. 2.

(f) Variety Acreages

These were obtained from plantation returns of the variety acreages to be reaped each year. The variety percentages for all crops for the years 1940 to 1948 are presented in Table IV.

TABLE IV.

Percentages of Acreages of Sugar Cane varieties recommended by the Department and other varieties reaped during the period 1940—1948.

Percentages of Totals

Varieties	1940	1941	1942	1943	1944	1945	1946	1947	1948
B.2935 ..	43.01	45.66	42.45	20.95	4.73	1.94	0.68	0.26	0.23
B.H.10(12)	23.15	22.16	19.81	12.69	8.00	4.76	3.19	2.49	1.36
B.726 ..	19.48	17.33	15.64	9.58	4.79	2.95	2.02	1.26	0.70
B.3013 ..	8.26	8.58	8.42	5.84	2.98	1.38	0.52	0.17	..
B.3127 ..	2.20	3.30	3.23	..	..	..	..	..	..
Mixed and other varieties	3.90	2.97	2.90	3.45	3.79	1.58	1.08	0.63	0.31
B.3439 ..	..	..	3.60	8.35	9.49	4.89	2.40	0.54	0.25
B.37161 ..	..	..	1.48	26.77	48.69	62.65	74.52	83.83	90.00
B.35187 ..	..	..	2.37	10.19	11.28	10.19	6.09	3.25	1.91
B.35245 ..	..	..	..	1.85	2.06	1.60	0.67	0.13	..
B.34104 ..	..	..	..	..	4.19	7.46	6.89	3.83	1.24
B.4098 ..	..	..	..	0.33	..	0.33	1.56	3.00	3.43
B.38155 ..	..	..	..	..	..	0.27	0.28	0.28	0.16
B.41227 ..	..	..	..	..	..	..	0.06	0.08	0.06
B.41211 ..	..	..	..	..	..	..	0.04	0.21	0.30
B.40105 ..	..	..	..	..	..	..	..	0.02	0.05
B.40102 ..	..	..	..	..	..	..	..	0.01	..
B.37193 ..	..	..	..	..	..	..	..	0.01	..

It will be seen from the above Table that the nobilised seedling B.37161 has practically replaced the standard noble canes B.H.10(12), B.2935 and B.726 during the period 1943 to 1948.

Planting material of the nobilised seedlings B.41211 and B.41227 was distributed in small quantities to planters during the year. Both of these seedlings have good growth habit, are easy to harvest, are clean trashers and possess good juice qualities. The variety B.41211, on account of its susceptibility to rat attack, is best suited for low and intermediate rainfall areas and the variety B.41227 to the higher rainfall areas.

B. COTTON

During the year under review, the planting of cotton was permitted as from 1st July. The price offered for cotton was not considered sufficiently attractive and only one hundred and thirty-seven acres were planted. Later in the year, the price of seed-cotton was increased from twelve to sixteen cents per pound but this information was received too late to have any material effect on the acreage planted.

A representative of the Raw Cotton Commission visited the Colony during the year and stressed the importance of an increased production of Sea Island cotton. A further increase in price has been made and there is little doubt that there will be a substantial increase in the area planted to cotton next year.

No pink boll-worm was observed in the field or ginnery although careful inspections were made; this is the eighth year since pink boll-worm has been found in the Colony, and it is hoped that this pest can now be regarded as eliminated.

C. FOOD CROPS.

As in the war years, the acreage of food crops grown during the year was regulated by Notice served under the Local Food Production (Defence) Control Order. Owners of land were required to plant a minimum of twenty-six per cent. of their arable acreage in food crops of which, at least, six per cent. was required to be "thrown-out" land. The areas of crops to be grown were as follows :—

‘Preparation land’ (20% of arable land) —					
Yams	..	..	..	..	46%
Sweet Potatoes	..	..	..	..	34%
Corn, eddoes, pulses etc.		..	..	..	20%
‘Thrown-out land’ (minimum of 6% of arable land) —					
Sweet Potatoes	..	..	..	..	100%

Owing to the dryness of the ‘rainy season’, the yields of food crops were generally poor for the second year in succession.

D. MINOR CROPS.

The propagation and distribution of various types of citrus, avocado pear, dwarf coconuts, breadfruit, Barbados cherry, guava and other fruit trees was continued during the year. A ‘follow-up’ system was introduced to ensure that the trees were properly planted and established. Applications from peasants were screened by the Peasant Instructors before being accepted to ensure that there was sufficient space and soil for planting.

Trials have been continued with such crops as maize, sorghum, tomatoes, onions and groundnuts with the object of producing better yielding strains.

Experiments with fodder crops have also been continued in conjunction with the general programme for improving animal husbandry.

PART III.
SECTION I.
PEASANT AGRICULTURE

BY

M. HALCROW, O.B.E.
Deputy Director of Agriculture

A. General Conditions During the Period 1st April, 1947 to 31st March, 1948

The Weather. It is to be hoped that it will be a long time before the Island experiences such a hard year. The average rainfall for 1947 was 38.80 inches (sixty-two stations), and although not quite as low as in 1930 (38.40 inches) it will be remembered as one of the driest and hardest years in living memory. The average rainfall for the whole Island over the past one hundred years has been 59.70 inches; the average in 1945 was 56.67 inches, and in 1946 it was only 46.65 inches. It can be seen, therefore, that the severe drought in 1947 followed two years of below average rainfall. Many peasants in the normally driest areas such as St. Philip, Christ Church and St. Lucy, had literally no crops at all. The surprising thing was that the supply of local food crops and vegetables in the Island as a whole was fair; this was due mainly to the splendid efforts of the estates under the Local Food Production Regulations, and of all cultivators including peasants in the higher rainfall areas.

The Main Food Crops. As already indicated, peasants generally felt the full weight of the drought conditions. At the lower elevations only very few growers reaped yams enough for seed purposes. Other food crops were correspondingly poor.

Sugar Cane. Sugar cane yields were generally well below average. In the low and intermediate rainfall areas peasants did well to reap ten tons per acre: in many areas five tons and less was the rule. Ratoon crops were frequently not worth reaping.

The total deliveries of peasants' and estates cane and average yields per acre may be summarised as follows :—

Sugar Cane Delivered to all Factories in 1948.

<i>Estates</i> (Tons)	<i>Peasants'</i> (Tons)	<i>Total</i> (Tons)	<i>Peasants' Cane</i> <i>as Per Cent. of</i> <i>Total</i>
641,044	77,211	718,255	10.75

Average No. of Tons of Cane per Acre Reaped in 1948.

			<i>Area</i> (Acres)	<i>Yield</i> (Tons)	<i>Average Yield</i> <i>per Acre</i> (Tons)
Estates'	..	..	32,786	641,044	19.50
Peasants'	..	..	7,700*	77,211	10.03

*Estimated.

Minor Crops. (a) *Groundnuts.* In the districts where the crop is usually

grown, namely St. Philip, Christ Church and St. Lucy, groundnuts failed practically completely due to drought.

(b) The same story goes for the seasonal planting of shallots in St. Philip; the growers are now faced with having to buy seed heads to start again.

(c) Cotton gave good returns in individual cases, but the average yield of peasants' plots was disappointing. The position may be summarised as follows :—

Year			Total Area of Peasants Plots (Ac.)	Total Yield of Seed Cotton (lb.)	Average Yield per Acre (lb.)
1943—44	..	..	710	182,745	257
1944—45	..	..	268	63,273	236
1945—46	..	..	137.5	30,448	221
1946—47	..	..	106.5	42,872	402
1947—48	..	..	102.5	27,237	265

There was very little cotton grown by the estates but their average yield was better than the peasants', as the following figures show :—

	Area (Acres)	Total Yield of Seed Cotton (lb.)	Average Yield of Seed Cotton Per Acre (lb.)
Estates	35.0	18,154	518
Peasants	102.5	27,154	265

The price obtained for the cotton crop was increased during the year from about twelve and a quarter cents per pound of seed cotton to sixteen cents per pound at the factory with the probability of a small bonus when sales are completed.

(d) Ginger suffered severely from the drought too, despite the fact that the crop is practically confined to the intermediate and high rainfall areas. Growers harvested only about one-third of the normal yield, i.e., on the average at the rate of about 6,000 to 7,000 lbs. of green ginger per acre. Prices ranged from twelve cents to twenty-four cents per lb.

(e) A small area of tobacco, about twenty-five to thirty acres, is usually grown by peasants mainly for the local cheroot ("Long Tom") trade. The price of the local leaf has continued to rise and by the end of the year it was worth seventy cents per pound to the grower.

(f) Tomatoes grown as a seasonal crop in the intermediate and high altitude areas was a very disappointing crop this year. Towards the end of the year some improvement occurred in the position in a few particular cases but, on the whole, the seasonal tomato crop can be said to have done badly. Prices to the growers ranged from sixteen cents to twenty cents per pound.

(g) If the year had been 'kinder', there is no doubt that cabbages would have been plentiful because the peasants in St. Thomas and parts of St. Joseph and St. George particularly made a determined effort to increase production. As it turned out, however, the crop was droughted. Nevertheless some peasants did quite well and, because the prices of vegetables were de-controlled early in the season, good prices were obtained, e.g. twenty cents to twenty-four cents per pound.

(h) Okras as a seasonal crop had a very much restricted growing period owing to the drought and, as a result, yields were much below average. Prices ranged from twenty-five cents to thirty-five cents per hundred (pods).

(i) *Irrigated Vegetable Crops*. Peasants who were able to carry out irrigation did very well as the prices of garden vegetables were de-controlled and there was a very good demand for them. Towards the end of the year (March 1948), the following was the general scale of prices obtained by growers in St. Michael :—

Beans (stringless)	..	..	10-12	cents per lb.
Beet	..	..	10-12	" " "
Carrot	..	..	14	" " "
Cabbage	..	..	20	" " "
Cauliflower	..	..	20-24	" " "
Lettuce	..	..	50-54	" " dozen
Shallot (green)	..	..	60-96	" " lb.
Shallot (dry heads)	..	..	30-40	" " "
Thyme	..	..	84	" " "
Tomatoes	..	..	16	" " "
Peppers	..	..	72	" " "

(j) The prolonged dry weather affected tree crops very seriously. Many peasants in the high altitude districts complained of fruit trees, especially limes, dying for no apparent reason. Yields of all tree crops were much below normal and Avocado pears were particularly scarce.

Pests and Diseases. There were several very bad attacks of *Laphygma* caterpillars. For example, the peasants in parts of St. Philip lost most of their guinea corn through the ravages of this pest, and any Indian corn that managed to withstand the drought was also badly damaged. Tomatoes, too, were severely attacked in most areas. Apart from this and any increase in root borer damage to sugar cane, the pests and diseases position was much about the same as usual.

Livestock. In spite of difficulties in obtaining imported concentrates and local fodder, there was no diminution in the intensive keeping of livestock by peasants. Indeed, if the long waiting lists for young pigs that are bred at the six Agricultural Stations was any indication, there was an ever-increasing demand for store pigs.

The increased number of services for all classes of stock except sheep at the Agricultural Department's six district stud centres is also an indication of the continued interest of the peasants in their livestock. Indeed it is a surprising fact that there appeared to be more pork available this year than in the previous year. That peasants' smallstock production has shown some improvement over the previous year may be inferred from the record of all animals slaughtered in the Bridgetown Public Market in recent years, viz. :—

	1939	1942	1944	1945	1946	1947
Cattle	2,544	2,347	2,222	3,341	3,395	2,756
Calves	1,331	629	514	736	679	603
Sheep	2,261	2,652	3,039	2,889	2,156	2,650
Goats	554	697	720	555	437	476
Pigs	10,317	9,146	6,159	5,179	4,415	5,430

Agricultural Credit. It was a difficult year, financially, for a large proportion of the peasant cultivators because of the generally poor crops obtained from the holdings. The position was aggravated by the fact that poor crops of cane on the plantations meant reduced earnings for the part-time cultivators. Coupled with these facts, the peasant proprietors of the larger holdings found the ever-increasing rates of pay demanded by hired labourers a heavy burden, especially in view of the alleged poor quality of the work done nowadays.

These factors, and a widening knowledge of its advantages through the work of the Extension staff, have contributed to a greater use being made of the Peasants' Loan Bank as shown by the following figures obtained through the Manager of the Bank :—

	1945-46	1946-47	1947-48
No. of loans granted during year ..	433	446	435
No. of short-term loans outstanding			
on 31st March in any year ..	36	30	55
No. of long-term loans outstanding			
on 31st May in any year ..	146	169	257
	615	645	747
Less Extensions ..	7	21	24
No. of Grantees	608	624	723
Amount of loans advanced ..	£3,873	£4,314	£5,377

Part of the increase has been due to the progress of the Department's irrigation scheme for peasant holdings. Part is due to the increased scale upon which loans are now made, which was revised in 1946-47, because of increased costs of production.

The Price of Agricultural Land. The average of thirty-six sales of peasant holdings during the war period 1941-1947, worked out at £129 per acre which was practically double the pre-war value. Despite the adverse weather conditions in recent years, there was no sign of any falling off in the demand for land during 1947-48 and, in general, it appeared that land values were still rising.

Land rents too have risen on the average by nearly twenty per cent. during the past eight years, and the trend in 1947-48 was still upwards.

Mechanisation. The peasants' interest in the mechanisation of agricultural operations is considerable and this interest derives from two main factors, (i) the peasants' ever-increasing difficulty in obtaining a reasonable output of work from the diminishing number of labourers who are prepared to work for peasant proprietors, and (ii) the peasants' natural desire to take advantage of the increased yields that are possible by using heavy implements during the dry season to improve soil tilth. Trials by the Department of Agriculture and by private individuals have shown that the small types of mechanical implements recommended by the manufacturers for market gardens and small holdings are of very little use for most purposes in Barbados. A good 30 to 40 H.P. general purpose Tractor of the most up-to-date design, with self-lift implements and adjustable tracks appears to be just as desirable for peasant holdings as for the larger holdings.

In the circumstances, peasants must rely on being able to hire mechanical implements from the plantations, and several plantation managements have

shown a readiness to do contract work on peasant holdings at prices ranging from nine dollars and fifty cents per acre for two sub-soil cuts in the straight banks, to eight dollars per acre for a complete rotary hoeing through the stumps. The Peasant Agricultural Extension staff have endeavoured to organise peasants who wished or needed to take advantage of the facilities so as to make it worth while for a plantation manager to send implements to a particular area, but progress in this direction has been slow.

Co-operation. There has been little, if any, change in the attitude of the rank and file of the peasants towards co-operation which is notoriously conspicuous by its almost complete absence from peasant life in Barbados. This does not mean that nothing has been done about co-operation. On the contrary, the Peasant Agricultural Instructors, with the assistance of the Co-Operative Officer, have brought into being group activity wherever it could safely be used to demonstrate the value of co-operation, namely, in connection with the supply of Metaldehyde for the control of slugs, work continued from the previous year, and the supply of fertilisers and feeding stuffs. In all thirty-one groups with a total membership of five hundred and thirty peasants were organised during the past eighteen months. Nearly one hundred pounds weight of Metaldehyde and seventy-five tons of fertilisers were involved. On the whole, this practical application of co-operation by the Department has been useful, but it remains to be seen if a movement of any size will develop.

Marketing. Owing to the drought, the supply of all agricultural produce fell far short of the demand, consequently growers had no difficulty in disposing of produce at maximum prices; indeed, the hawkers ranged the Island in search of anything and everything in the food line. The growers, therefore, had no marketing problems and of course no reaping or harvesting worries, because the hawkers did all the harvesting necessary.

Peasant Holdings Competitions. As in the previous year in connection with the Agricultural Society's Annual Exhibition, the Deputy Director of Agriculture and two senior officers of the Department adjudicated in two competitions, (i) Vegetable Gardens Competition, and (ii) Peasant Holdings Competition. There were sixty-six entries in the former competition and the standard of the winning gardens was extremely high. The first prize garden was irrigated by means of a fully automatic overhead system. It was difficult to find fault with some of the entries and, as a result, the competition was very keen.

There were forty-four holdings entered in the other competition, which was judged mainly on the basis of the balanced or mixed farming aspect, including livestock. At the lower elevations where the drought was very severe the standard was not up to usual, but on the whole the results were very creditable in the circumstances.

B. The Work of the Department's Peasant Agricultural Extension Services

Staff. The staff of Peasant Agricultural Instructors continued unchanged from the previous year, i.e. eleven instructors. On the 1st August, the post of Senior Peasant Agricultural Instructor was filled by the appointment of Mr. C. A. E. Beckles, a Diploma graduate of the Imperial College of Tropical Agriculture, Trinidad. The Deputy Director continued in general charge of the peasant agricultural work.

Visits. A total number of 5,214 peasant holdings were visited during the

year. Of this total number, only 950 holdings were visited by the six instructors who are in charge of the six district Stations, and the balance, being 4,264 holdings, by the five remaining instructors.

School Gardens. The Peasant Instructors made 310 visits to school gardens. There was a noticeable improvement in the general standard of management of the school gardens as a result of the close liaison that now obtains between the senior officers of the two Departments.

The school gardens competition was adjudicated as usual by the Deputy Director of Agriculture and the Plant Diseases Inspector. The results of the three terms' marks showed that the high standard of previous years had been maintained in spite of the dry weather. Sixty school gardens took part in the competition.

Meetings. In all, thirty-three meetings of peasants were organised by the Peasant Agricultural Instructors throughout the Island. Three of these meetings took the form of carefully advertised Peasant Farmers Days, namely at Jerusalem, The Home and Groves Agricultural Stations, respectively, in which lectures and demonstrations were given by senior specialist officers of the Department. Six meetings were arranged in connection with the visit of the Evans Commission on Emigration. In general, the meetings were well attended and their purpose was achieved.

Soil Conservation. Contour farming has been taught and demonstrated by all members of the staff. The methods are slowly being appreciated and adopted by the most progressive peasant cultivators. In all twenty-eight soil conservation projects were carried through on peasant holdings during the year. A pamphlet entitled "Contour Farming" (No. 15, October, 1947) was issued by the Department.

Irrigation. The Department's scheme for assisting peasants to install irrigation units on their holdings was pursued with the utmost vigour. A consignment of forty windmill units arrived in the previous year but incomplete. By reconditioning used pumps purchased locally and buying serviceable pipe, tanks and fittings from disused sugar factories, a start was made in providing 6', 8', 10' and 12' diameter windmill units on peasant holdings. In all twenty-five units were completed and installed during the year and, in addition, financial assistance was given to four other applicants in connection with units installed privately. The position may be summarised as follows :—

	<i>St. Philip</i>	<i>Christ Church</i>	<i>St. Michael</i>	<i>St. James</i>	<i>Total</i>
Windmill units erected	1	9	10	5	25
Other assistance	1	1	1	1	4
	2	10	11	6	29

In addition to irrigation, these units provided valuable sources of water for domestic purposes for many families in the neighbourhood, especially in areas where the stand pipes were frequently shut off for many days at a time.

The money required for these units was provided partly by the applicant in the form of (i) a deposit, and (ii) a loan through the Peasants' Loan Bank, and partly by a free grant from Colonial Development and Welfare funds. A

short financial statement covering the twenty-five units installed through the Department's organisation may be summarised as follows :—

Cost of 25 units installed — total	..	..	..	\$ 14,241.81
Amount deposited by applicants	..	..	..	\$ 3,715.00
„ loaned to applicants	..	..	..	3,405.90
„ as a free grant	..	..	..	7,120.91
				\$ 14,241.81

The additional free grants for other forms of assistance amounted to \$739.45

The scheme is going ahead at a steady pace and it is undoubtedly proving to be a Development Scheme of real importance and benefit to the people and the colony.

In addition to the carrying out of the foregoing work, the Department has completed a very useful map of all the areas of peasant holdings in the Island, drawn to scale and shown in relation to the sheet water area (of Dr. Senn's Report), as part of the preliminary planning of possible village irrigation schemes based on central pumping stations instead of individual units.

Distribution of Planting Material and Fruit Trees. There was a shortage of yams for planting at the beginning of the season and many peasants were glad of the facilities provided by the Department in the way of yams produced at the District Stations and stored against the possibility of a shortage. In all 3,655 pounds weight were sold in this way for planting and, in addition, Peasant Instructors were instrumental in putting many peasants in touch with sources of supply on plantations. The Stations were also able to supply shallot heads for planting.

In order to provide a check on the fruit trees and coconuts that are issued from Codrington Botanical Station at reduced prices to peasants, a system of routine inspection of the plants at intervals of six months was introduced, whereby the Peasant Instructors were able to report on the progress or otherwise of the young plants. The material issued from the Codrington Station was as follows :—

Kind					To Peasants	To other Applicants
Orange	..	..	..	..	36	211
Grapefruit	..	..	..	..	22	88
Lime	..	..	..	..	36	121
Shaddock	..	..	..	..	18	18
Pomelo	..	..	..	..	—	14
Lemon	..	..	..	..	1	5
Mandarin	..	..	..	..	19	35
Avocado Pear	..	..	..	..	6	54
Breadfruit	..	..	..	..	1	47
Citron	..	..	..	..	—	5
Totals	..	..	..	..	139	598
Dwarf Coconuts	..	..	..	..	523	570

The District Agricultural Stations. The rainfall at all Stations was even

less than in the previous year, which was of course much below average. Detailed rainfall returns were as follows:—

1947	The Home St. Philip (ins.)	Sayes Court Ch. Ch. (ins.)	Groves St. George (ins.)	Jerusalem St. Peter (ins.)	Haggatts St. Andrew (ins.)	Bullen St. James (ins.)
January ..	2.47	4.33	3.92	4.80	3.88	2.86
February ..	1.28	1.93	1.58	3.23	1.59	0.43
March	0.43	0.66	0.92	0.65	1.63	0.56
April	0.88	1.02	1.78	0.89	1.68	0.79
May	1.13	1.88	1.71	1.09	1.58	0.73
June	5.33	3.51	9.09	8.73	8.67	5.97
July	7.03	5.86	10.65	9.04	9.12	6.72
August	1.25	1.42	3.78	1.91	1.87	2.31
September ..	1.33	2.33	4.70	2.79	3.25	1.08
October	3.92	3.46	5.06	5.48	8.06	3.33
November ..	2.16	2.44	4.26	1.86	3.36	2.10
December ..	1.72	1.61	2.75	2.65	2.78	3.42
1947 Total ..	29.20	30.45	50.20	43.12	47.47	30.30
1946 „ ..	39.57	42.23	61.03	42.88	44.70	43.12

The figures speak for themselves. To say that 1947 was a very dry year is putting it mildly.

The Stations are primarily stud centres based on an establishment of stud animals controlled by the Livestock Officer from the Central Livestock Station at the Pine. As stud centres, the Stations played an increasing part as the following figures show:—

Animals Standing at Stud at March 31st, 1948

	Bulls	Buck Goats	Ram Sheep	Boars	Total
The Home (St. Philip)	2	3	1	1	7
Sayes Court (Ch. Ch.) ..	2	4	1	2	9
Groves (St. George) ..	5	3	2	3	13
Jerusalem (St. Peter) ..	3	3	1	2	9
Haggatts (St. Andrew)	2	2	1	1	6
Bullen (St. James) ..	—	1	1	1	3
	14	16	7	10	47

The Groves Station had other, including imported, bulls earlier in the year that were later transferred to the Central Livestock Station when the accommodation there became available.

No. of Bull Services paid for at the Stations

1947-48			The Home	Sayes Court	Groves	Jerusalem	Haggatts
April	..	..	15	20	59	23	30
May	..	..	32	15	55	13	38
June	..	..	19	18	67	10	28
July	..	..	46	19	49	16	49
August	..	..	29	8	54	23	25
September	..	..	24	6	39	12	15
October	..	..	23	8	49	19	17
November	..	..	29	3	49	15	30
December	..	..	31	7	51	27	23
January	..	..	26	12	40	19	15
February	..	..	23	8	53	18	17
March	..	..	17	18	60	25	26
Total 1947-48			314	142	625	220	313
,, 1946-47			184	121	460	179	211

The total number of bull services at the five Stations (Bullen does not cater for cattle) was therefore 1,614 in 1947-48, as compared with 1,155 in the previous year, an increase of practically forty per cent.

No. of Buck Goat Services paid for at the Stations

1947-48			The Home	Sayes Court	Groves	Jerusalem	Haggatts	Bullen
April	..	..	5	14	18	3	14	3
May	..	..	9	18	15	6	13	—
June	..	..	15	42	52	7	30	4
July	..	..	23	27	38	17	31	5
August	..	..	14	19	60	20	27	3
September	..	..	17	29	32	18	22	10
October	..	..	46	48	46	39	47	29
November	..	..	18	34	45	26	14	18
December	..	..	9	19	37	17	12	10
January	..	..	12	18	15	12	5	1
February	..	..	8	10	22	11	12	3
March	..	..	12	9	17	14	10	2
Total 1947-48			188	287	397	190	237	88
,, 1946-47			165	281	285	58	267	50

The total number of buck goat services at the six Stations was therefore 1,387 in 1947-48 as compared with 1,106 the previous year, an increase of twenty-five per cent.

No. of Ram Sheep Services paid for at the Stations

1947-48	The Home	Sayes Court	Groves	Jerusalem	Haggatts	Bullen
April	15	19	32	8	3	2
May	11	7	20	2	7	—
June	14	17	28	4	14	4
July	23	9	36	18	15	1
August	10	7	29	5	10	1
September ..	11	4	17	6	14	2
October	8	3	28	4	5	2
November ..	10	7	18	3	3	—
December ..	11	3	14	2	7	1
January	3	5	14	3	2	1
February	8	3	12	2	5	1
March	12	8	19	2	5	2
Total 1947-48	136	92	267	59	90	17
„ 1946-47	124	122	266	62	169	32

The total number of ram services at the six stations was therefore 661 in 1947—48 as compared with 775 in 1946—47, a reduction of nearly fifteen per cent. The explanation of this drop in the use of the rams is bound up with the fact that there are many ram sheep kept by peasants and the only attraction at the Stations would be rams of outstanding merit which we do not possess as yet.

No. of Boar Pig Services paid for at the Stations

1947-48	The Home	Sayes Court	Groves	Jerusalem	Haggatts	Bullen
April	7	11	27	7	2	1
May	10	5	26	4	2	2
June	10	8	23	6	2	1
July	8	13	26	6	3	3
August	13	16	43	4	2	1
September ..	8	9	11	7	1	2
October	8	7	21	7	2	3
November ..	13	6	37	6	4	—
December ..	19	10	40	9	12	2
January	14	13	25	16	1	4
February	15	13	32	7	5	5
March	15	10	35	9	1	6
Total 1947-48	140	121	356	88	37	30
„ 1946-47	121	113	216	57	51	15

The total number of boar services at the six Stations was therefore 772 in 1947—48 as compared with 573 in the previous year, an increase of practically thirty-five per cent.

In connection with the stud centres, an attempt was made to follow up the results of the work by means of a survey of the services paid for at the Stations during the first nine months of their operation, i.e. from June 1944 to March 1945. The survey was carried out by three Peasant Instructors, using a questionnaire, and calling on the owners of the dams in question. One of the main points brought out by the survey was the need for more instruction for the peasants in animal husbandry generally. This matter will be followed up in order to ensure that the money spent on the stud centres is not wasted.

The stud centres have been run at a considerable loss inasmuch as the revenue from service fees falls very far short of the cost of keeping the animals. This may be summarised as follows:—

Items	<i>Cost of Upkeep of Bulls</i>				
	The Home	Sayes Court	Groves	Jerusalem	Haggatts
	\$	\$	\$	\$	\$
Non-cash (e.g. fodder)	92.39	87.30	340.53	43.77	—
Cash (i.e. purchases) ..	312.01	306.98	1,024.06	414.97	366.46
Labour (est.) ..	160.58	138.12	508.30	66.69	181.20
	<u>\$564.98</u>	<u>\$532.40</u>	<u>\$1,872.89</u>	<u>\$525.43</u>	<u>\$547.66</u>

Estimated total cost of bulls at five centres = \$4,043.36. Against this the total revenue from bull services at the Stations amounted to \$1,334.40.

Cost of Upkeep of Buck Goats and Ram Sheep

Items	The Home	Sayes Court	Groves	Jerusalem	Haggatts	Bullen
	\$	\$	\$	\$	\$	\$
Non-cash (from Stn.) ..	35.88	69.38	71.95	22.05	—	27.24
Cash purchases ..	240.96	350.43	231.28	147.88	209.27	129.12
Labour (est.) ..	128.40	50.93	40.90	16.86	101.93	37.92
	<u>\$405.24</u>	<u>\$470.74</u>	<u>\$344.13</u>	<u>\$186.79</u>	<u>\$311.20</u>	<u>\$194.28</u>

The total estimated cost of bucks and rams at the Stations was therefore \$1,912.38, whereas the revenue from service fees of bucks and rams was \$490.50.

Cost of Upkeep of Boars

Items	The Home	Sayes Court	Groves	Jerusalem	Haggatts	Bullen
	\$	\$	\$	\$	\$	\$
Non-cash ..	68.30	57.32	77.19	19.54	—	11.00
Cash purchases ..	43.29	123.47	238.21	127.39	68.56	57.00
Labour ..	35.83	18.84	84.80	72.95	33.97	21.00
	<u>\$147.42</u>	<u>\$199.63</u>	<u>\$400.20</u>	<u>\$219.88</u>	<u>\$102.53</u>	<u>\$89.00</u>

The total estimated cost of boars at these Stations was therefore \$1,158.66 as compared with a total revenue from services of boars amounting to \$522.72.

In short, the over-all revenue from services at the stud centres amounted to only \$2,353.62 against an estimated running cost of \$7,114.40. In other words the stud centres were subsidised to the extent of \$4,760.78 during the year, not including supervision, establishment charges and overheads.

The second purpose of the Stations, namely that they should demonstrate the benefits and practicability of mixed farming and better methods of peasant farming generally, has been continued more or less according to plan. Activities in this connection included the following:— (i) the accounts and costings of the different crops and branches of the mixed farming at the Stations have been kept meticulously in such a way that the details and a summary can be obtained easily at the end of a period of two or three years; (ii) contour cultivation has been extended on all the Stations; (iii) demonstration plots of alternative crops including cotton, ground nuts, onions, shallots, were grown at Jerusalem, Sayes Court, The Home, Haggatts and Bullen; (iv) some modifications in the original four-course rotation are being introduced gradually but it is too early yet to say how far it will be possible to improve on the old sugar cane economy and the cane hole system. Our present aims are (a) the replacement of the ratoon canes in the drier areas by more profitable crops, (b) intensive inter-cropping of yams and plant cane with vegetables in the higher rainfall areas. This was successfully demonstrated at Groves. (v) Plans for irrigation at the Stations have made little or no progress owing to delay in the delivery of pumping equipment; (vi) the livestock at the Stations, including cows, pigs and small stock, were kept in good order. Where dairying was possible, i.e. at four of the Stations, it showed some profit. Sow pigs made a loss, but on the other hand a total of one hundred and sixty-six young pigs were sold to peasants at market prices. The silos were filled to capacity early with the best fodder available to carry the stock through the dry season.

It was on the whole a very difficult year for all the Stations, with the exception of Groves. This is reflected in the extremely poor yields of crops. The following figures give an indication of the sort of thing that cultivators in the intermediate and low rainfall areas must have suffered:—

Some Average Yields per Acre at the Stations in 1947—1948

	Plant Cane	Ratoon Cane	Yams	Sweet Potatoes	Guinea Corn Fodder
	Tons/Acre	Tons/Acre	lb./Acre	lb./Acre	Tons/Acre
The Home (St. Philip)	.. 5.0	0.0	1,335	1,536	1.3
Sayes Court (Ch. Ch.)	.. 7.8	0.0	1,400	—	—
Groves (St. George)	.. 31.4	24.0	5,600	—	—
Bullen (St. James)	.. 17.6	2.4	600	800	—
Jerusalem (St. Peter)	.. 18.0	7.0	1,734	7,884	21.0
Haggatts (St. Andrew)	.. 24.7	—	—	—	—

As far as the establishment of the Stations is concerned, all major capital works had been completed in the previous years but some improvements at all Stations included the following:—(i) the bull pens at all Stations were fitted with cables for safety and exercise; (ii) outside runs for the pigs, especially the young pigs, were completed at all Stations. (iii) At Sayes Court a new well was dug and the windmill was re-erected for irrigation purposes. This change was necessary due to the high salinity of the old well. (iv) At Jerusalem a second well was completed to the base of the coral rock, unfortunately, again without finding water. Arrangements have been made to dig a tunnel from the bottom of the well; (v) at Haggatts, St. Andrew, a well was dug on land near the Station and a plentiful supply of water was found at a depth of forty feet. Plans have been made for irrigating the Station from the well.

SECTION II

SUGAR CANE BREEDING AND SEEDLING TESTING

By

B. DEL. INNISS

Botanist, B.W.I. Central Sugar Cane Breeding Station.

Sugar Cane Breeding — B.50' and B.s.48' Series.

The usual methods were employed in the controlled crossing of various sugar cane varieties at Groves Agricultural Station from October, 1947 to January, 1948. The season was exceptionally dry, and generally speaking, arrowing was light, irregular and late. Only eighty-one crosses were obtained, and one of these was an open cross of B.37161 x B.4098. This cross was possible because of the very great preponderance of B.37161 in the Island's crop, and also because B.37161 is a female parent and does not shed pollen.

A very high percentage of the crosses had viable seed, particularly those obtained early in the season; however, the number of seedlings obtained per cross was disappointingly low. Advantage has been taken of these circumstances to introduce a very large number of seedlings of the outstanding cross B.37161 x B.4098.

Table I gives under group heads a list of the crosses made, the number of seedlings germinated, potted, planted in the Field Nursery, and the B.s.49' First Year Seedling trial.

TABLE I.

No. of Seedlings in each Group germinated, potted and planted in the Field Nursery and First Year Trial

GROUP	No. of Crosses	No. Germinated	No. Potted	No. Planted in Field Nursery	No. Planted in B.s. 49' Series First Year Trial
<i>S. officinarum</i> x <i>S. spontaneum</i>					
Local nobilisations	2	504	500	345	99
Noble x Glagah x Celebes ..	1	300	300	219	—
<i>S. officinarum</i> x <i>S. barberi</i>					
4th Nobilisation Chunnee ..	1	300	300	238	—
<i>S. officinarum</i> x <i>S. barberi</i> x <i>S. spontaneum</i>					
Noble x Chunnee x Local ..	16	14,333	9,227	7,724	800
Noble x Chunnee x Local x Celebes	5	11,420	5,240	3,768	1,213
Noble x Chunnee x Glagah ..	5	416	412	367	—
Noble x Chunnee x Glagah x Celebes	5	4,738	1,533	1,106	119
Noble x Chunnee x Glagah x Local	20	6,115	4,615	3,517	287
Noble x Chunnee x Glagah x Local x Celebes	4	2,790	2,790	1,711	396
<i>S. officinarum</i> x <i>S. sinense</i>					
2nd Nobilisation Sinense ..	1	—	—	—	—

TABLE I--*Continued*

No. of Seedlings in each Group germinated, potted and planted in the Field Nursery and First Year Trial

Group	No. of Crosses	No. Germinated	No. potted	No. Planted in Field Nursery	No. planted in B.s. '49 Series 1st Year Trial
<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. sinense</i>					
Noble x Glagah x Sinense ..	2	170	170	165	—
Noble x Glagah x Celebes x Sinense	1	350	350	337	—
<i>S. officinarum</i> x <i>S. barberi</i> x <i>S.</i> <i>spontaneum</i> x <i>S. sinense</i>					
Noble x Chunnee x Local x Sinense	1	80	80	77	—
Noble x Chunnee x Glagah x Sinense	2	300	300	250	—
Noble x Chunnee x Glagah x Local x Celebes x Sinense	1	—	—	—	—
Glagah x Chunnee x Local x Sinense	5	894	885	717	—
<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. Robustum</i>					
Noble x Glagah x Robustum ..	2	8,000	500	435	—
<i>S. officinarum</i> x <i>S. barberi</i> x <i>S.</i> <i>robustum</i>					
Noble x Chunnee x Robustum ..	2	140	140	120	—
<i>S. officinarum</i> x <i>S. barberi</i> x <i>S.</i> <i>spontaneum</i> x <i>S. robustum</i>					
Noble x Chunnee x Local x Robus- tum	2	3,465	565	538	—
Noble x Chunnee x Glagah x Local x Robustum	3	150	150	132	—
Totals	81	54,465	28,057	21,766	2,914

Planting the First-Year Seedling Trial—B.49' Series.

This series was bred in 1946, potted and planted in the field nursery in 1947 and from this into the first year seedling trial in November 1947. This trial is usually planted at the end of October, but dry weather conditions caused this to be postponed until the end of November. For the first time, canes which were considered to be too thin for commercial purposes were discarded at this stage. This procedure greatly reduces the numbers planted in the first year seedling trial and will no doubt result in a great saving of time and labour during the crop season.

The numbers of crosses and seedlings in each group planted in the first year seedling trial are given in Table II.

No. of Crosses and Seedlings in each Group planted in the First Year
Seedling Trial, December 1947—B.49' Series

GROUP					No. of Crosses	No. of Seedlings Planted in Trial
<i>S. officinarum</i> x <i>S. spontaneum</i>						
3rd Nobilisation Local	..	..	..	..	1	67
Glagah Nobilisations	..	..	..	..	2	94
2nd Nobilisation Dacca	..	..	..	..	1	80
Noble x Glagah x Local	..	..	..	..	1	150
Noble x Glagah x Celebes	..	..	..	..	1	141
Noble x Glagah x Local x Celebes	..	..	..	..	2	245
<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. barberi</i>						
Noble x Local x Chunnee	..	..	..	..	10	1,448
Noble x Glagah x Chunnee	..	..	..	..	8	818
Noble x Glagah x Local x Chunnee	..	..	..	..	19	2,100
Noble x Glagah x Celebes x Chunnee	..	..	..	..	10	776
Noble x Local x Celebes x Chunnee	..	..	..	..	9	1,300
<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. robustum</i>						
Noble x Glagah x Robustum	..	..	..	..	1	50
<i>S. officinarum</i> x <i>S. barberi</i> x <i>S. robustum</i>						
Noble x Chunnee x Robustum	..	..	..	..	1	9
<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. barberi</i> x <i>S. robustum</i>						
Noble x Glagah x Chunnee x Robustum	..	..	..	..	2	34
Noble x Local x Chunnee x Robustum	..	..	..	..	7	495
Noble x Glagah x Local x Chunnee x Robustum	..	..	..	..	2	115
<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. barberi</i> x <i>S. sinense</i>						
Noble x Local x Chunnee x Sinense	..	..	..	..	1	56
Noble x Glagah x Local x Chunnee x Sinense	..	..	..	..	8	457
Noble x Glagah x Celebes x Chunnee x Sinense	..	..	..	..	2	40
Noble x Local x Celebes x Chunnee x Sinense	..	..	..	..	1	20
<i>S. officinarum</i> x <i>S. spontaneum</i> x <i>S. barberi</i> x <i>S. robustum</i> x <i>S. sinense</i>						
Noble x Local x Chunnee x Robustum x Sinense	..	..	..	..	1	10
Totals	..	..	..	..	90	8,505

Results of Reaping the First Year Seedling Trials — B.s.48' and B.48' Series

These series of seedlings were bred in 1945 and 1946, respectively. The B.48' series were planted in the field nursery in May 1946 and from this into the First Year Seedling Trial in November and December, 1946, while the B.s.48' series were planted from pots into a short season First Year Seedling Trial in May 1947.

As in previous years, the seedlings were cut, bundled and laid out for inspection. Selection was made more difficult by the very dry conditions experienced during the growth of the crop, and by the fact that many of the seedlings died from the effects of the drought.

Sixty-three selections were made in the B.s.48' Series, and three hundred and thirty-six in the B.48' Series making a total of three hundred and ninety-nine selections altogether.

Table III gives details of the field and final selections made from each cross.

TABLE III.
First Year Seedlings — B.s.48' and B.48' Series — Field and
Final Selections

Cross	No. of Seedlings Reaped	No. Field Selected	% Field Selection	No. Final Selection	% Final Selection
B.s. 48' Series.					
B.3439 x B.(30) L.7	80	—	—	—	—
B.3439 x B.37175	100	1	1	1	1
B.349 x Co.290	100	6	6	5	5
B.34102 x B.37193	199	—	—	—	—
B.34102 x B.4098	190	6	3	4	2
B.35197 x B.34104	90	8	9	5	6
B.35207 x B.34104	190	4	2	2	1
B.35247 x B.34104	290	6	2	6	2
B.35247 x B.38279	140	4	3	2	1
B.35247 x B.4306	98	4	4	3	3
B.37161 x P.O.J.2878	100	5	5	5	5
B.37227 x B.4098	90	5	6	2	2
B.38233 x B.34104	500	18	4	9	2
B.39207 x B.41211	160	7	4	6	4
B.40105 x B.37193	180	6	3	5	3
B.40272 x B.4098	100	4	4	3	3
B.40272 x Co.419	90	1	1	1	1
B.43283 v B.41227	90	2	2	2	2
B.4455 x B.4098	70	3	4	1	1
Co.421 x B.45301	100	1	1	1	1
B.48' Series.					
B.3354 x B.4098	200	2	1	2	1
B.3365 x B.39220	80	2	3	1	1
" x B.39268	90	4	4	4	4
" x B.40123	35	1	3	1	3
" x B.40271	35	1	3	1	3
" x B.4146	100	1	1	1	1
" x B.41242	100	2	2	1	1
" x B.41255	100	4	4	4	4
B.3439 x B.3337	250	19	8	18	17
" x B.39274	100	—	—	—	—
" x B.4453	90	6	7	2	2
" x B.44227	80	3	4	2	2
" x Co.290	20	3	15	3	15
" x Co.419	100	13	13	12	12
" x C.P.36-116	100	6	6	5	5
" x Dacca	40	4	10	2	5
B.34102 x B.3337	100	3	3	3	3
B.34102 x 28N.G.7	20	1	5	1	5
B.34117 x B.35269	26	—	—	—	—
B.35197 x B.34104	600	28	5	27	5
" x B.37193	200	16	8	9	5
" x B.38192	100	—	—	—	—
" x B.4098	100	—	—	—	—
" x B.40256	100	1	1	1	1
" x B.41211	200	15	8	10	5
" x B.41226	100	—	—	—	—
" x B.42231	100	6	6	4	4
B.35206 x B.34104	250	2	1	1	—
B.35206 x B.4098	100	6	6	6	6
B.35207 x B.35269	41	—	—	—	—
B.35207 x B.40270	10	—	—	—	—
B.35207 x B.4098	100	4	4	3	3

TABLE III—*Concluded*

Cross				No. of Seedlings Reaped	No. Field Selected	% Field Selection	No. Final Selection	% Final Selection
B. 35218	x	B. 39250	.. ..	100	5	5	1	1
"	x	B. 4098	.. ..	400	9	2	6	2
"	x	B. 41242	.. ..	100	9	9	9	9
"	x	B. 41255	.. ..	100	2	2	2	2
"	x	B. 41276	.. ..	100	3	3	3	3
"	x	B. 44236	.. ..	100	8	8	5	5
B. 35247	x	B. 3337	.. ..	450	25	6	16	4
"	x	B. 37224	.. ..	53	—	—	—	—
"	x	B. 37261	.. ..	95	1	1	1	1
"	x	B. 39220	.. ..	100	1	1	1	1
"	x	B. 41211	.. ..	100	—	—	—	—
"	x	B. 41227	.. ..	200	13	7	8	4
"	x	B. 4226	.. ..	100	1	1	1	1
"	x	B. 42114	.. ..	100	2	2	1	1
B. 37161	x	B. 41211	.. ..	185	9	5	6	3
"	x	Co. 419	.. ..	30	2	7	2	7
B. 37162	x	B. 41228	.. ..	100	—	—	—	—
B. 37227	x	B. 4098	.. ..	100	—	—	—	—
B. 37266	x	"	.. ..	100	1	1	1	1
B. 38203	x	B. 41211	.. ..	150	11	7	9	6
B. 38233	x	B. 34104	.. ..	550	17	3	16	3
B. 38260	x	B. H. 10(12)	.. ..	70	—	—	—	—
B. 38272	x	B. 34104	.. ..	100	6	6	3	3
"	x	B. 37193	.. ..	100	5	5	1	1
"	x	B. 4098	.. ..	100	7	7	1	1
B. 39157	x	"	.. ..	200	3	2	3	2
B. 39177	x	B. 37193	.. ..	150	6	4	5	3
B. 39223	x	B. 41211	.. ..	100	2	2	2	2
B. 39253	x	B. 4098	.. ..	100	2	2	1	1
B. 4092	x	B. 37193	.. ..	58	2	4	2	4
B. 4096	x	B. (30)L. 7	.. ..	100	2	2	2	2
B. 4097	x	Co. 419	.. ..	33	2	4	1	3
B. 40157	x	B. 41211	.. ..	80	3	4	3	4
B. 40272	x	Co. 290	.. ..	80	4	5	4	5
"	x	32 M. Q. 657	.. ..	60	—	—	—	—
"	x	28 N. G. 251	.. ..	70	3	4	2	3
B. 4145	x	B. 34104	.. ..	100	6	6	6	6
"	x	B. 37193	.. ..	200	12	6	8	4
"	x	B. 4098	.. ..	150	16	11	13	9
B. 4214	x	B. 41203	.. ..	100	11	11	9	9
B. 42279	x	B. 41276	.. ..	100	7	7	7	7
E. 42304	x	B. 37193	.. ..	100	6	6	6	6
B. 4455	x	B. H. 10(12)	.. ..	100	3	3	3	3
B. 4457	x	B. 4098	.. ..	100	1	1	1	1
B. 44130	x	B. 603	.. ..	25	1	4	1	4
B. 44233	x	B. 37193	.. ..	100	2	2	2	2
Co. 421	x	B. 4098	.. ..	150	14	9	10	7
"	x	B. 41211	.. ..	250	25	10	19	8
"	x	B. 41261	.. ..	80	1	1	1	1
"	x	B. 4459	.. ..	100	4	4	2	2
"	x	Co. 290	.. ..	100	2	2	2	2
P. O. J. 2878	x	B. 41211	.. ..	100	1	1	1	1
Ba. 11569	x	B. 4405	.. ..	40	1	3	1	3
"	x	B. 44226	.. ..	100	3	3	1	1
M. D. 47	x	B. 41211	.. ..	100	1	1	1	1
Totals				13,433	527		399	

As a result of this trial it was decided not to repeat any of the following crosses, as the percentage of seedlings selected from their progenies is not sufficiently large :—

B.3439	x	B.39274
B.34117	x	B.35269
B.35197	x	B.38192
"	x	B.4098
"	x	B.40256
"	x	B.41226
B.35207	x	B.35269
"	x	B.40270
B.35218	x	B.39250
B.35247	x	B.37224
"	x	B.37261
"	x	B.41211
"	x	B.4226
"	x	B.42114
B.37162	x	B.41228
B.37227	x	B.4098
B.37266	x	B.4098
B.38260	x	B.H.10(12)
B.38272	x	B.37193
"	x	B.4098
B.39253	x	B.4098
Co.421	x	B.41261
Co.421	x	Co.290
P.O.J.2878	x	B.41211
M.D.47	x	"

Progress with Seedlings of the B.s.47' and B.47' Series.

The 419 seedlings of the B.s.47' and B.47' Series were multiplied in ten cane hole plots at Codrington during 1947, and in October of that year, a further selection was made when the number was reduced to 265. The selected seedlings were planted in the Central Cane Breeding Station Second year Seedling Trials at the low rainfall station Codrington (two trials) and in duplicate trials at the high rainfall stations Pool and Drax Hall. These trials will be reaped during the 1949 crop season.

Progress with Seedlings of the B.46' Series.

These seedlings were planted in the Central Cane Breeding Station Second Year Seedling trials at the low rainfall station Codrington (two trials) and in duplicate trials at the high rainfall stations Pool and Colleton in November 1945. These trials were reaped as plant canes during the past crop season when 54 seedlings were selected. One of these was selected for the breeding plots at Groves only, and the remainder for further testing in Barbados or other contributing colonies. These seedlings will be sent direct to contributing colonies in October 1947, in accordance with the new regulations passed at the last Meeting of the Advisory Committee.

The performances of the selected seedlings and the standard varieties are given in Tables IV and V.

TABLE IV
Second Year Seedling Trials—B.46' Series
Plant Canes

Variety	Parentage	Low Rainfall		High Rainfall	
		Tons Cane per Acre	Z.H.R. Brix	Tons Cane per Acre	Z.H.R. Brix
Group I					
B.37161 ..	Standard	26.75	20.7	21.53	22.6
B.4098 ..	"	26.66	22.2	18.23	23.3
B.4604 ..	B.3554 x B.3337 ..	19.44	21.4	23.99	22.7
B.4608 ..	B.3354 x Co.290 ..	23.39	21.6	20.55	21.9
Group II					
B.37161 ..	Standard	26.40	21.9	21.84	22.6
B.4098 ..	"	27.52	23.7	21.33	21.7
B.4642 ..	B.35197 x P.O.J.2878 ..	20.12	20.9	18.75	22.3
B.4645 ..	B.35206 x " ..	16.51	20.6	19.80	21.1
B.4647 ..	" x " ..	17.37	22.0	17.63	22.4
Group III					
B.37161 ..	Standard	29.24	22.5	20.55	22.3
B.4098 ..	"	23.91	22.9	20.04	22.6
B.4659 ..	B.35218 x B.3337 ..	22.36	22.7	22.19	22.7
B.4668 ..	B.35218 x B.37175 ..	16.25	22.2	19.69	22.5
Group IV					
B.37161 ..	Standard	27.18	23.3	23.56	22.6
B.4098 ..	"	27.95	24.2	27.09	23.0
B.4681 ..	B.35218 x P.O.J.2878 ..	20.64	22.4	25.80	23.6
B.4682 ..	" x " ..	17.11	22.5	19.69	22.1
B.4688 ..	B.35247 x B.3337 ..	21.93	21.4	22.88	20.8
B.4691 ..	" x " ..	22.53	21.4	29.76	21.3
B.4692 ..	" x B.34104 ..	25.54	21.6	26.06	22.9
B.4699 ..	B.37161 x B.34104 ..	17.72	22.9	20.21	22.6
B.46102 ..	" x " ..	23.56	22.0	26.57	22.5
B.46103 ..	" x " ..	23.82	21.3	21.24	22.2
Group V					
B.37161 ..	Standard	28.29	20.6	20.45	22.8
B.4098 ..	"	29.37	21.9	19.61	22.5
B.46105 ..	B.37161 x B.35187 ..	24.60	16.5	23.99	19.7
B.46113 ..	" x B.40256 ..	21.24	21.8	17.63	22.8
B.46116 ..	" x P.O.J. 2878 ..	21.76	21.0	18.40	22.9
Group VI					
B.37161 ..	Standard	26.06	21.8	20.12	23.3
B.4098 ..	"	24.68	22.0	21.50	23.2
B.46136 ..	B.37161 x P.O.J. 2878 ..	21.67	22.2	22.19	22.9
B.46144 ..	B.38212 x B.34104 ..	18.75	22.6	20.64	23.0
B.46149 ..	B.4094 x B.3337 ..	15.05	23.0	18.65	24.1
B.46150 ..	" x " ..	20.98	22.1	22.19	23.2
B.46151 ..	B.4096 x B.35187 ..	20.73	22.2	17.97	24.6
Group VII					
B.37161 ..	Standard	29.24	21.6	19.35	23.0
B.4098 ..	"	28.55	23.4	20.30	22.5
B.46190 ..	B.3439 x B.37175 ..	19.69	23.1	19.26	23.7
B.46199 ..	" x Paseroean ..	22.10	23.2	20.98	23.2
Group VIII					
B.37161 ..	Standard	25.80	22.6	24.60	23.2
B.4098 ..	"	26.75	23.4	23.13	23.5
B.46204 ..	B.3439 x P.O.J. 2714 ..	20.90	22.8	21.59	23.0
B.46218 ..	B.34102 x B.3337 ..	18.75	23.3	19.61	23.6
B.46223 ..	B.34117 x P.O.J. 2878 ..	12.13	21.0	25.46	24.0
B.46230 ..	B.35197 x B.34104 ..	15.57	22.6	20.21	22.2
B.46232 ..	" x " ..	22.45	22.3	28.04	22.5

TABLE V.

Second Year Seedling Trials—B.46' Series—Plant Canes

Variety	Parentage	Low Rainfall		High Rainfall	
		Tons Cane per Acre	Z.H.R. Brix	Tons Cane per Acre	Z.H.R. Brix
Group IX					
B.37161 ..	Standard	19.18	20.2	31.56	22.3
B.4098 ..	"	19.35	19.0	33.54	22.5
B.46248 ..	B.35218 x B.4098 ..	11.35	19.9	28.29	23.6
Group X					
B.37161 ..	Standard	21.16	20.5	29.41	22.0
B.4098 ..	"	24.42	20.6	34.57	22.8
B.46265 ..	B.35247 x B.34104 ..	22.70	20.3	29.33	22.0
B.46281 ..	B.37161 x ..	15.05	20.1	27.78	22.4
B.46284 ..	" x ..	21.07	21.3	36.46	23.3
Group XI					
B.37161 ..	Standard	14.36	19.4	28.64	21.3
B.4098 ..	"	21.24	20.5	34.14	23.1
B.46288 ..	B.37161 x B.40256 ..	15.74	19.9	30.60	22.3
B.46289 ..	" x ..	16.51	20.4	24.94	22.0
B.46290 ..	" x ..	13.76	19.5	27.18	21.4
B.46293 ..	B.37161 x P.O.J.2878 ..	11.09	18.4	26.66	21.7
B.46295 ..	" x ..	17.89	21.1	26.74	22.2
B.46297 ..	" x ..	18.06	21.4	29.07	22.5
Group XII					
B.37161 ..	Standard	17.97	19.9	30.96	22.3
B.4098 ..	"	21.84	21.4	29.76	21.7
B.46308 ..	B.37161 x P.O.J.2878 ..	18.58	19.9	22.70	23.1
B.46320 ..	B.40105 x B.37193 ..	15.74	18.7	29.24	20.7
B.46339 ..	B.34102 x B.34104 ..	14.92	20.4	27.95	24.1
Group XIII					
B.37161 ..	Standard	23.13	20.7	35.60	22.2
B.4098 ..	"	24.25	22.4	33.60	22.6
B.46340 ..	B.34102 x B.34104 ..	16.00	23.2	28.12	23.8
B.46351 ..	B.35206 x P.O.J. 2878 ..	21.59	22.4	24.08	22.1
Group XIV					
B.37161 ..	Standard	19.78	20.7	30.87	22.5
B.4098 ..	"	19.78	20.4	31.13	23.5
B.46364 ..	B.35247 x B.3337 ..	16.43	20.7	31.99	23.0
B.46369 ..	"	17.29	19.4	30.10	20.5
B.46378 ..	B.37161 x B.34104 ..	19.18	22.5	24.68	23.8
Group XV					
B.37161 ..	Standard	17.63	21.4	31.22	21.9
B.4098 ..	"	12.56	22.2	35.69	23.3
B.46384 ..	B.37161 x P.O.J.2878 ..	10.32	20.3	30.07	20.4
B.46391 ..	" x ..	20.04	21.9	27.00	21.9
B.46394 ..	" x ..	15.05	21.3	31.22	23.2
B.46397 ..	B.4096 x B.35187 ..	17.54	20.3	34.23	23.4
B.46399 ..	B.40105 x B.37193 ..	12.13	21.1	25.37	22.5

Progress with Seedlings of the B.45' Series

These seedlings were reaped in the Central Cane Breeding Station Second Year Seedling Trials as plant canes in 1946, with the exception of the trial at Pool which was burnt and could not be reaped. All seedlings in this trial were reaped as first ratoons, while the selected seedlings only were reaped from the

trial at Bowmanston. At Pool 25 seedlings were selected, two of which were for the Breeding Plots at Groves only, while the others will be tried in Barbados or other contributing colonies. At Bowmanston the results of the ratoon trial made it possible to eliminate eight varieties on their ratoon results.

The results obtained from the selected seedlings in both trials, together with the performance of the standards, are given in Tables VI and VII.

TABLE VI.

Second Year Seedling Trials—1st Ratoons—Pool
Harvested 27th February—1st March, 1948

Variety	Parentage							Tons Cane per Acre	Z.H.R. Brix
Group I									
B. 37161 ..	Standard ..	..	..	..	..	..	..	24.42	23.3
B. 4098 ..	" ..	..	..	..	..	..	..	22.62	23.3
B. 4502 ..	B.3274 x B.34104 ..	..	..	..	..	..	..	20.73	25.1
B. 4503 ..	" x " ..	..	..	..	..	..	..	20.30	22.5
B. 4504 ..	" x " ..	..	..	..	..	..	..	26.06	24.0
B. 4506 ..	" x " ..	..	..	..	..	..	..	23.22	22.6
B. 4514 ..	B.3353 x B.34104 ..	..	..	..	..	..	..	16.60	21.7
Group II									
B. 37161 ..	Standard ..	..	..	..	..	..	..	17.03	23.1
B. 4098 ..	" x " ..	..	..	..	..	..	..	18.75	22.8
B. 4526 ..	B.3354 x B.34104 ..	..	..	..	..	..	..	18.65	22.4
B. 4530 ..	" x " ..	..	..	..	..	..	..	19.95	21.3
B. 4531 ..	" x " ..	..	..	..	..	..	..	14.45	24.1
B. 4534 ..	" ..	..	..	..	..	..	..	19.44	21.9
B. 4537 ..	B.3354 x B.34104 ..	..	..	..	..	..	..	15.82	21.8
B. 4547 ..	B.3365 x B.41242 ..	..	..	..	..	..	..	14.45	22.5
Group III									
B. 37161 ..	Standard ..	..	..	..	..	..	..	18.49	23.0
B. 4098 ..	" x " ..	..	..	..	..	..	..	13.67	22.7
B. 4553 ..	B.3371 x B.34104 ..	..	..	..	..	..	..	16.94	23.0
B. 4556 ..	" x " ..	..	..	..	..	..	..	17.72	22.5
B. 4558 ..	" x B.37193 ..	..	..	..	..	..	..	18.15	22.2
B. 4572 ..	B.3439 x B.(30)L.7 ..	..	..	..	..	..	..	14.53	24.1
Group IV									
B. 37161 ..	Standard ..	..	..	..	..	..	..	17.20	23.1
B. 4098 ..	" x " ..	..	..	..	..	..	..	17.72	23.7
B. 4581 ..	B.3439 x B.39252 ..	..	..	..	..	..	..	22.96	21.7
B. 4596 ..	B.35206 x B.34104 ..	..	..	..	..	..	..	18.06	22.7
Group V									
B. 37161 ..	Standard ..	..	..	..	..	..	..	22.36	22.4
B. 4098 ..	" ..	..	..	..	..	..	..	19.35	24.2
B. 45137 ..	B.38272 x B.34104 ..	..	..	..	..	..	..	21.93	25.4
B. 45141 ..	B.39157 x P.O.J.2878 ..	..	..	..	..	..	..	19.09	21.8
Group VI									
B. 37161 ..	Standard ..	..	..	..	..	..	..	19.09	22.7
B. 4098 ..	" ..	..	..	..	..	..	..	20.12	23.0
B. 45151 ..	B.39254 x B.34104 ..	..	..	..	..	..	..	26.66	23.7
B. 45152 ..	" x " ..	..	..	..	..	..	..	27.69	23.5
B. 45156 ..	B.39254 x P.O.J.2878 ..	..	..	..	..	..	..	21.84	22.8
B. 45162 ..	B.4092 x B.37193 ..	..	..	..	..	..	..	17.89	22.7

TABLE VII
Second Year Seedlings Trials—1st Ratoons—Bowmanston—
Harvested 31st March and 1st and 2nd April, 1948

Variety	Parentage	Tons Cane per Acre	Z.H.R. Brix
Group VIII			
B.37161 ..	Standard	28.98	21.6
B.4098 ..	"	29.67	22.7
B.45188 ..	B.3354 x B.34104	33.45	22.0
Group X			
B.37161 ..	Standard	29.50	21.0
B.4098 ..	"	30.87	23.0
B.45224 ..	B.3439 x 32 M.Q.579	28.55	22.4
B.45237 ..	B.37161 x B.37256	30.96	22.7
Group XI			
B.37161 ..	Standard	28.72	21.8
B.4098 ..	"	28.90	22.1
B.45267 ..	B.39254 x Co.290	29.58	21.8
B.45270 ..	B.4092 x B.37193	21.33	21.7
Group XII			
B.37161 ..	Standard	28.29	21.7
B.4098 ..	"	33.63	22.4
B.45274 ..	Co.421 x B.34104	26.32	22.2

Progress with Seedlings of the B.44' Series

The seedlings in this series were cut in the Central Cane Breeding Station Second Year Seedling Trials during the 1946 crop season. In November of the same year, the ones selected for trial in Barbados were planted in six Third Year Seedling Trials scattered over the main ecological categories of the Island. These trials were reaped in 1948 as plant canes.

Owing to the severe drought conditions which were experienced during 1947, yields in all trials were low, and none of the seedlings of the B.44' series proved to be significantly better than the standard varieties. B.43341 was perhaps the most outstanding and consistent. It is an erect cane, with a very vigorous habit. The individual canes were very thick in the Second Year Seedling Trials, but during the past season could only be described as of medium width. The variety tends to arrow profusely, which is an undesirable habit as far as Barbados is concerned. The variety may become a commercial variety in some of the contributing colonies but unless it performs very much better under more normal conditions, is unlikely to do so in Barbados.

B.4466 also gave fairly good yields of cane in most trials, but like its female parent B.37161, it tends to retain its trash and has a rather poor juice. It looks very much like B.37161 but, generally speaking, the canes are of a lighter colour. It is not expected that it will become a commercial variety in Barbados.

Progress with Seedlings of the B.43' Series

This series was reaped as plant canes from the Third Year Seedling Trials in 1947. The trials at Spring Hall and Carrington were abandoned owing to dry conditions, and the fields were ploughed. At Kingsland and Foursquare, the trials were allowed to ratoon in spite of very adverse weather, and the yields are consequently very small. It was only at Colleton and Blackmans that the crops grew nearly normally, but even here they suffered severely from time to time.

In the trial at Foursquare, the varieties B.42114, B.43127, B.43133, B.43139, B.43330, B.43337, B.43338 and B.43398 all exceeded the standard varieties. B.43127 was outstanding, but its plant cane results were not so good; it tends to hold its trash very firmly and has a rather poor juice. Of the outstanding varieties as plant canes, B.43337 did well, but its juice quality appears to be very poor. B.43391 did not quite come up to the standard, B.37161, and its juice quality also appeared to have suffered from the dry conditions.

At Kingsland, the varieties B.42114, B.4306, B.4329, B.4381, B.43127, B.43133, B.43139, B.43330, B.43337 and B.43413 all exceeded the standards. B.43337 gave the heaviest yield of ratoon cane and juice of fair quality. B.43391 did not quite come up to the standards, and gave juice of fair quality only.

The conditions of the trials were so far from those normally encountered in Barbados that no useful purpose can be served by discussing them further here, except to say that the outstanding varieties have demonstrated their ability to stand up to extremely adverse conditions.

In the trial at Colleton B.43127, B.43391 and B.43398 exceeded both the standard varieties on yield of cane, while B.4329, B.4362 and B.43133 gave yields comparable with those given by the standards. B.43391 was the outstanding variety, as it was in the plant cane trial. It was very sound, trashed well, and had a fairly good juice. B.43127 had a fairly good juice, but was very trashy and difficult to clean, while B.43398 although giving a good yield, is very thin, difficult to clean and very fibrous. B.4362 did quite well and has an excellent juice. It trashes easily, and will probably do much better under wetter conditions. B.43337 was disappointing in its yield of ratoon cane. It is a very vigorous cane, but unfortunately arrows heavily, particularly in the high rainfall areas, and this limits cane growth.

At Blackmans, B.43391 was again outstanding, while B.43337 also put up a good performance. B.4329 also did well, but its juice is inclined to be poor. In this trial, many of the plots were severely damaged by rats, and this is reflected in the large numbers of rotten canes recorded.

From the results of these trials, it would appear that B.43391 has a good chance of becoming a commercial cane in Barbados. The results of the outstanding varieties, together with those of the standards, are given in Table VIII.

TABLE VIII

Variety	Foursquare		Kingsland		Colleton		Blackmans	
	Tons Cane per Acre	Z.H.R. Brix	Tons Cane per Acre	Z.H.R. Brix	Tons Cane per Acre	Z.H.R. Brix	Tons Cane per Acre	Z.H.R. Brix
B.37161 ..	8.07	22.0	7.73	22.2	29.77	23.3	26.11	21.0
B.4098 ..	4.34	21.2	8.19	22.9	31.04	23.1	31.67	22.2
B.4362 ..	5.94	22.3	6.64	23.9	29.61	24.0	20.86	22.6
B.43127 ..	16.99	21.4	11.97	22.2	33.54	22.1	26.27	20.7
B.43337 ..	10.16	19.6	12.06	21.1	27.89	21.2	36.83	21.4
B.43391 ..	7.47	20.5	7.11	21.4	35.08	22.5	40.07	21.2

Progress with Seedlings of the B.42' and earlier Series

A. The Seedlings Tested

First Ratoons—B.34104, B.37161, B.4098, B.41211 and B.41227.
Second „ —B.34104, B.37161, B.4098, B.41211 and B.41227.

B. An ecological Classification of the Trial—Turner's Classification.

This classification was proposed by Turner after a study of the sugar cane soils of the British West Indian Colonies, and is based on the cultural requirements of the soils. It is as follows :—

Group I. Soils with a natural tilth and free natural drainage, which require neither to be ploughed nor drained.

Group II. Soils with a tilth that can be improved by ploughing, but which do not require to be drained.

(b) Intermediate Rainfall

Select Seedling Trials—1st Ratoons—Waterford.

(c) High Rainfall

Select Seedling Trials—1st Ratoons—Lancaster and Mt. Wilton.
—2nd Ratoons—Andrews.

Group III. Soils which require to be drained but are preferably left unploughed.

Group IV. Soils of a poor natural tilth in which a tilth can be created by ploughing, but which require to be drained to maintain their tilth.

(b) Intermediate Rainfall

Select Seedling Trials—1st Ratoons—Bulkeley.

Group II. (b) Waterford—1st Ratoons. The plant cane trial at Waterford was burnt and the ratoon trial suffered severely in the ensuing drought. Yields were very low, and the differences between mean yields proved to be insignificant. B.41211 gave the heaviest yield of ratoon cane, closely followed by B.41227 and B.37161. B.4098 had the best quality juice and B.37161 the poorest.

Group II. (c) Lancaster and Mt. Wilton—1st Ratoons. At Lancaster B.41211 gave the heaviest yield of ratoon cane, closely followed by B.41227, B.4098 and B.37161. All of these varieties gave significantly better yields than B.34104. B.34104 gave juice of best quality, closely followed by B.41227. B.41211 gave juice of the poorest quality, but even this was quite high in sucrose.

At Mt. Wilton B.41211 significantly and greatly exceeded all other varieties tried on yield of ratoon cane, giving an average yield of 47.83 tons per acre. This was followed by B.41227 which significantly exceeded B.34104, B.37161 and B.4098. The differences between the yields of the last three varieties were not significant.

B.34104 and B.4098 gave juice of the best quality but there was little to choose between the juice qualities of any of the varieties tried.

Group II. (c) Andrews—2nd Ratoons. In this trial B.41227 gave the heaviest yield of second ratoon cane, significantly exceeding all other varieties tried.

The differences between the mean yields of B.34104, B.37161, B.4098 and B.41211 could not be shown to be significantly different. B.34104 and B.41211 were rather badly damaged by rats, but in spite of this gave quite good yields. There was little to choose between the juice qualities of any of the varieties tried.

Group IV. (b) Bulkeley—1st Ratoons. In this trial B.41227 gave the heaviest yield of cane and B.4098 the lowest. However, the differences between the mean yields were very small and could not be shown to be statistically significant.

There was very little to choose between the juice qualities of any of the varieties tried, all being very high in sucrose.

Summary and Conclusions

In the high and intermediate rainfall areas, B.41211 and B.41227 have proved to be as good as or better than the standard varieties B.37161 and B.4098, while B.34104 has been outclassed by all four. B.41211 and B.41227 have been released to planters for trial on a plantation scale. B.41211 has the advantage of arrowing sparingly even in the more elevated parts of the Island, and cane growth is consequently not limited to any extent from this cause. In addition, it is a very soft cane and will probably be better suited to the small three-roller plants than B.37161.

Mosaic Disease Trials

The B.44' Series of seedlings was inoculated artificially by the Sein technique to test them for resistance to mosaic disease. Only two seedlings showed the symptoms of the disease. Ba.11569 plants, inoculated at the same time to serve as controls, showed less than twenty per cent. take. This may be attributed to the very dry and relatively cool weather conditions which prevailed.

Effect of Temperature on the 'Take' of Mosaic in Ba.11569 Plants

An experiment designed to test the effect of temperature at the time of inoculation on the 'take' of mosaic was carried out at Codrington. Plants of Ba.11569 were inoculated at temperatures varying from 30°C. to 36°C. It was found that for the conditions of the experiment a temperature between 32°C. and 33°C. gave the highest 'take'. The results of the experiment are given below:—

Temperature	Percentage 'Take'
30° C.	18%
31° C.	11%
32° C.	33%
33° C.	56%
35° C.	22%
36° C.	11%

SECTION III.

BOTANY

BY

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Propagation and Distribution of Ornamental Plants

The propagation and distribution of ornamental plants was greatly increased during the year. The number of plants distributed is given in Table I.

TABLE I

Year	No. of Orders	No. of Species	No. of Plants Distributed
1946—47	96	26	2,346
1947—48	154	26	13,090

A large number of these plants were distributed free of cost to other Government Departments; the remainder being sold to the public. A certain amount of renovation and replanting was carried out in the ornamental wall garden at Codrington.

Distribution of Vegetable Seeds from the Department's Offices

This distribution aims at encouraging the purchase of vegetable varieties which are known to be suited to local conditions. The Department purchases these seeds from reliable firms and sells them in small quantities at cost. The quantity of seeds distributed has continued to increase, as shown in Table II.

TABLE II.

SEED	VARIETY	Amount (lb.)	
		1946—47	1947—48
Beans	Bountiful	4,600	5,880
"	Kentucky Wonder	—	70
" (Lima)	Fordhook	—	10
"	Ideal	—	5
Beet	Eclipse	—	20
	Detroit Dark Red	159	180
Cabbage	Danish Ball Head	11	13
	Late Flat Dutch	8	5
	Wakefield Charleston	5	8

TABLE II (Cont'd)

SEED	VARIETY	Amount (lb.)	
		1946—47	1947—48
Cantaloupe ..	P.M.R. No. 45	—	1
Carrot ..	Chantenay	12	49
	Danvers Half Long	213	115
	Oxheart	10	107
	New Imperator	—	6
	Nantes	2	—
Cauliflower ..	Early Market	7	8
Cucumber ..	Henderson	—	3
Egg Plant ..	Black Beauty	1	1
Kohl Rabi ..	Early White Vienna	4	3
Lettuce ..	Mignonette	40	39
	Black Seeded Simpson	—	13
Parsley ..	Emerald	8	11
Radish ..	.. ..	2	3
Swiss Chard ..	Lucullus	2	2
Squash ..	.. ..	—	1
Tomato ..	Marglobe	26	30
Turnip ..	Purple Top White Globe	3	2
	Total	5,113	6,585

Propagation and Distribution of Economic Trees

(a) *Citrus*. Eight types of citrus trees were propagated and distributed, i.e. lime, orange, grapefruit, shaddock, lemon, mandarin, pomelo and citron. The scion material consisted chiefly of budwood from local vigorous seedling trees, and to a less extent, of commercial varieties imported from Trinidad and established in the orchard at Codrington Experiment Station. The stock used was mainly sour orange grown from seed imported from Trinidad and, to a lesser extent, Seville orange from seed imported from Grenada.

A trial planting of wild grapefruit was made but the growth was extremely poor and it is obvious that this species is not suited to local conditions.

During the year a total of six hundred and fifty-eight budded citrus plants were distributed at a price of six cents to peasants and twenty-five cents to others (see Table III).

For some time it has been felt that many trees which were distributed to peasants at the reduced price of six cents never came into production owing to having been planted in unsuitable sites, overcrowding and lack of proper cultivation and attention. During the year a system has been in operation whereby no trees are distributed to peasants until the planting sites have been visited and approved by one of the Peasant Agricultural Instructors. Further, after the trees have been issued, regular periodic follow-up visits are made by the Peasant Agricultural Instructors and advice given. The system has stimulated the peasants' interest in the care of their trees and has saved some wastage of planting material.

(b) *Avocado Pear*. Propagation is carried out by budding and grafting. Considerable difficulty has always been experienced in obtaining even a fair percentage of takes and, as a result, it is difficult to meet the demand for budded trees. In the future no further budding will be carried out and orders will be filled with seedlings from selected trees of good type. During the year sixty-five budded trees were distributed.

(c) *Dwarf Coconuts.* Coconuts of the 'Dwarf' variety which come into bearing in three to five years, were imported from St. Lucia and distributed. There was no falling off in the demand for nuts for planting during the year, the reduced numbers distributed (Table III) being the result of difficulty in obtaining adequate supplies from St. Lucia. One thousand eight hundred and fifty-seven nuts were distributed during the year.

TABLE III
Distribution of Economic Trees

SPECIES	VARIETIES	Total No. of Plants Delivered	
		1946—47	1947—48
Citrus			
Citron	Trinidad	8	5
Grapefruit	Foster, Duncan, Marsh, Walters, Claybury Nos. 1 & 2	199	123
Lemon	Claybury, Layne House	26	7
Lime	Codrington, Claybury, Tahiti, Lisbon	323	164
Mandarin	Dancy, Claybury Nos. 1, 2, & 3..	57	57
Orange	Tardiff, Parson Brown, Navel, Layne House, Nos. 1 & 3, Ruby, Pineapple, Claybury Nos. 1, 2 & 3,	302	249
Pomelo	Codrington	23	14
Shaddock	Burkes Village, Claybury Nos. 1 & 2	102	39
		1,040	658
Avocado Pear	Claybury, Nos. 1, 2 & 3, Frere Pilgrim Nos. 1, 2, 3, 4, 5, 6, Codrington	69	65
Miscellaneous		6	48
Breadfruit		34	19
Barbados Cherry ..			
Guava		42	58
Grape		4	5
Golden Apple		19	10
Pawpaw		5	38
Sugar Apple		—	4
Coconuts	Dwarf	3,360	1,857
	Total	4,579	2,762

Minor Crops

Owing to exceptionally dry weather and poor germinations, several minor crop trials had to be abandoned.

(a) *Maize*. Mass selection in the field of Barbados, Hawaii and Trinidad types were continued. A summary of the results of a replicated field trial of these varieties is given below in Table IV.

TABLE IV.

Variety	Total No. of Cobs per acre	No. of Sound Cobs per acre	Total Weight of Cobs lb. per acre	Weight lb. per acre of sound Cobs
Barbados	6,215	3,616	1,405	1,170
Hawaii	6,099	3,223	1,308	1,044
Trinidad	4,982	1,473	928	706

The Trinidad type, as usual, was severely attacked by ear worm.

(b) *Sorghums*. Two trials were planted at Codrington and the Central Livestock Station to compare the yield of grain and fodder of twelve varieties imported from the U.S.A. with the local Guinea corn. Both trials failed and will be repeated. The varieties included in these trials were as follows:—

- (1) Grain — —Martin Combine, Plainsman, Texas Dwarf Milo and Texas Double Dwarf Milo.
- (2) Forage — —Atlas Sorgo, Black Amber and Sumac.
- (3) Grain & Forage—Bonita, Darso, Hegari, Schrock Kafir and Texas Black Bull Kafir.

In addition to the above, small observation plots of ninety-six different types from the Sudan were planted. These covered an extremely wide range of both early and late maturing types. Thirty were selected for further testing and seed collected.

(c) *Tomatoes*. A trial comparing the yields of ten progenies of Marglobe x Local Small back-crossed to Marglobe with the standard variety Marglobe was carried out. All progenies far outyielded the standard.

In a second trial, the following varieties showed considerable promise and will be tested further:— Bounty, Early Chatham, Pearl Harbour and H.E.S. 823.

(d) *Onions*. In small scale tests the variety Early Grano gave good yields. At one station a yield of one hundred and fifty pounds of uncured onions was obtained from one hundred and sixty-five square feet.

(e) *Pole Beans*. The Hawaiian pole bean Lualua-lei gave excellent results when compared with the standard Kentucky Wonder, and seed is now on sale at the Department's office.

(f) *Groundnuts*. Small field trials were reaped at the Agricultural Stations at Haggatts and Jerusalem. Other trials planted at Sayes Court, Bullens and The Home failed owing to poor germination. The trials were planted in September and reaped in January. The following varieties were included:— (1) Local Runner, (2) Valencia, (3) Spanish Bunch. Three spacings were used, namely:— (a) 12" x 6", (b) 12" x 12", (c) 12" x 24". The mean yields in pounds per acre of unshelled nuts as reaped are given in Table V.

TABLE V.

	Haggatts Agricultural Station			
	12" × 6"	12" × 12"	12" × 24"	Mean
Local Runner ..	5,480	4,800	4,460	4,913
Valencia ..	4,556	3,780	2,652	3,663
Spanish Bunch..	4,352	4,420	2,865	3,879
Mean	4,794	4,338	3,359	

	Jerusalem Agricultural Station			
	12" × 6"	12" × 12"	12" × 24"	Mean
Local Runner ..	2,400	2,010	1,560	1,990
Valencia ..	2,340	1,200	1,050	1,530
Spanish Bunch..	1,680	1,200	780	1,220
Mean	2,130	1,470	1,140	

At Haggatts the differences between variety means and combined variety x spacing means were not significant. Differences between spacing means, however, were significant. The significant difference being ± 741 pounds per acre.

At Jerusalem the differences between variety means were not significant, but differences between the spacing and combined variety x spacing were. The significant differences in each case being ± 146 and ± 235 pounds per acre, respectively.

In both trials the imported bunch varieties showed considerable promise from the point of view of yield, earliness and ease of harvesting. Further trials on a more extensive scale are planned.

Fodder Crops

(a) *Perennial Forage Grasses.* A randomised block trial was established at the Central Livestock Station, Pine, in which the following were included:—

- (1) Guatemala Grass
- (2) Elephant Grass var. Merker
- (3) Elephant Grass var. Uganda
- (4) Elephant Grass var. Florida
- (5) Coloniaio Grass (*Panicum spectabile*).

The trial has been cut once since planting and the yields are given in Table VI. Guatemala grass had not grown sufficiently to be worth while cutting.

Both Florida and Coloniaio grasses are obviously inferior in quality and yield and will be replaced by the other three. Coloniaio grass grows rapidly and produces a lush herbage when established from seed, but its habit is entirely different and inferior when grown from cuttings or root clumps.

TABLE VI.

Age—100 days from Planting

Variety	Yield— Ton Green Matter per Acre	Per Cent Dry Mat- ter	Analysis of Dry Matter—%				
			Ash	Fi- bre	Oil	Pro- tein	Car- bohy- drate
Merker ..	6.37	21.2	10.4	32.0	1.7	9.1	46.8
Uganda ..	5.71	20.5	8.7	32.2	1.9	5.5	51.7
Florida ..	3.19	27.4	10.3	30.7	1.3	8.4	49.3

(b) *Perennial Pasture Grasses*. An attempt was made to establish a trial at the Central Livestock Station, Pine, but this failed owing to dry weather.

Analyses of the grasses included are given in Table VII along with the *best* analysis of sour grass (*Andropogon pertusus*) for comparison.

TABLE VII.

Grass	Per Cent. Dry Matter	Analysis of Dry Matter—%				
		Ash	Fibre	Oil	Pro- tein	Car- bohy- drate
Sour Grass	52.1	9.5	33.0	2.8	4.1	50.6
Rhodes Grass	25.3	10.8	26.0	2.1	8.8	52.3
<i>Paspalum dilatatum</i> ..	32.8	16.3	28.0	1.4	8.2	46.1
<i>Brachiaria decumbens</i> ..	30.0	11.3	27.6	2.5	10.1	48.5
<i>brizantha</i> ..	28.3	10.1	24.5	1.3	8.5	55.6
<i>Eriochloa polystachia</i> ..	26.1	14.8	28.5	1.9	7.2	47.6

(6) Sudan Grass (*Sorghum sudanense*). A small trial planting was sown in October at Codrington Experiment Station. In spite of receiving little or no rain, an excellent yield of twelve tons of green matter per acre was obtained ten weeks after sowing and the second cutting yielded nine tons per acre ten weeks later. An analysis of the dry herbage is given below, Table VIII.

TABLE VIII.

Grass	Per Cent. Dry Matter	Analysis of Dry Matter—%				
		Ash	Fibre	Oil	Pro- tein	Car- bohy- drate
Sudan Grass ..	29.9	6.6	26.9	1.6	8.4	56.5

(d) *Alfalfa*. Plots of the following varieties were maintained at Codrington Experiment Station under irrigation:— (1) Hairy Peruvian, (2) Provence, (3) South West Common, (4) Hunter River—N.S.W. strain, (5) Hunter River—S. Australian strain. The plots have been cut each month and the mean yield per cut amounted to 3,300 pounds of green matter per acre. The mean analysis of three separate samples was as follows:—

TABLE IX.

Grass	Per Cent Dry Matter	Analysis of Dry Matter—%				
		Ash	Fibre	Oil	Protein	Carbohydrate
Alfalfa	30.0	9.6	25.9	1.9	18.8	43.8

(e) *Miscellaneous Legumes*. Plots of the following were maintained at Haggatts Agricultural Station:—

- (1) *Indigofera subulata*
- (2) *Pueraria phaseoloides*
- (3) *Centrosema pubescens*
- (4) *Calopogonium muconoides*

Both the *Indigofera* and the *Pueraria* appear promising, the latter in particular. It is slow in establishment but made excellent growth even through the dry season. Seed is being collected for further planting.

Afforestation

(a) *Distribution of Casuarinas*. The free distribution of young casuarina trees in pots was continued, and a total of 4,772 were delivered during the year.

(b) *Government Casuarina Plantations at Needham's Point*. These plantations were established in 1942—43. During the year a thinning was made; four hundred and seventeen trees were felled and yielded approximately thirty-nine tons of firewood.

SECTION IV.

CHEMISTRY

By

L. A. HALL, C. B. FOSTER and B. DEL. INNISS

With the resignation of the Chemist, Mr. F. H. B. Blackburn, from the Department, the work of this Section has been carried on, as far as possible, by other members of the staff.

Soil Investigations

Over the period 1929—31, a large number of soil samples was taken, covering the Red, Intermediate Red, Intermediate Black, St. George's Valley, Red Sand, Christ Church Ridge and Black soil types of the Coral Limestone area. During the present year, the same fields or adjoining fields have been re-sampled. The exchangeable potashes have been determined on these soil samples and the mean results are set out in Table I.

TABLE I.

Soil Type	No. of Samples	Per Cent. of Exchangeable Potash	
		1929-31	1947
Red	25	0.0161	0.0177
Intermediate Red .	28	0.0123	0.0171
Intermediate Black ..	10	0.0162	0.0194
Black	21	0.0252	0.0264
St. George's Valley ..	3	0.0139	0.0157
Red Sand	7	0.0060	0.0118
Christ Church Ridge ..	16	0.0145	0.0186

It is interesting to note that the mean percentage of exchangeable potash has increased in all soil types over the past twenty years. The average application of potash is 100 lb. K_2O per acre. Analyses of cane carried out over the years 1928—30 indicated that the whole cane, as milled, contained approximately 0.1% K_2O . A yield of thirty tons cane per acre would thus remove 66 lb. K_2O , and 40 tons 88 lb. K_2O . The potash manuring should therefore have resulted in an accumulation of potash in the soil, and these analyses indicate that part of this accumulation is in the exchangeable form.

Soil Survey of Agricultural Stations

Samples of soil from the following fields at the Agricultural Stations have now been taken for analysis:—

Jerusalem	..	..	Field No.	1 A
			"	" 1 B
			"	" 2*
			"	" 4*
Sayes Court	..	..	Field No.	1
			"	" 2*
			"	" 4*
Bullen	..	..	"	" 2
			"	" 4
Groves	..	..	"	" 1
			"	Smith
			"	No. 4*
			"	" 5*
The Home	..	..	"	" 1
			"	" 2
			"	" 4
Haggatts	..	..	"	" 2*

* Analysed last year.

Milling Laboratory

In connection with manurial and genetical trials carried out by the B.W.I. Central Sugar Cane Breeding Station and by the Department, four hundred and eighty-two sample bundles of cane were milled. The expressed juice and megass were analysed and the sugar and fibre content of the whole cane determined.

Phosphate in Juice

Forty-one sample bundles of cane of the variety B.37161 were taken from some of the estates in the dry areas throughout the Island for investigation of the phosphate content of juice. Factories in these areas experienced some clarification difficulty at the beginning of the crop which it was thought was due to a low phosphate content of juice.

L. A. H.

Manurial Trials with Sugar Cane

In considering the results of the trials reaped in 1948, it must be borne in mind that the rainfall for 1947 was very much below average; the total fall for the year being 38.80 inches as compared with a normal average of 59.73 inches. Further, the total for the critical five-month period following the application of the nitrogenous manures, August to December 1947, was 15.23 inches as against the normal average of 35.27 inches for the past one hundred years. As will be seen from the foregoing, there was not sufficient rain for the canes to make full use of the manures applied, particularly the nitrogenous manures, which were applied in July and October.

The results of the trials are given in detail in the Tables below.

Trial 1. Objective: To ascertain the effects of all possible combinations of nitrogen, phosphate and potash, at one level, on the yield of cane and on the sucrose content of the juice.

Station: Joes River Plantation. Second Ratoons.
 Lay out: Six randomised blocks.
 Variety: B.37161.
 Treatments:

Plot	Treatment	Plot	Treatment
1	Control	5	N.
2	P.	6	N.K.
3	K.	7	N.P.
4	P.K.	8	N.P.K.

N = 2 cwt. per acre of Sulphate of Ammonia
 P = 2 cwt. per acre of Superphosphate
 K = 2 cwt. per acre of Muriate of Potash.

The following results were obtained.

TABLE I.

Treatments	Yield Tons Cane per Acre (mean of 6 replicates)	Remarks	per Cent Sucrose in Juice	Remarks
1. Control ..	16.48	No significant increase over control	19.6	No significant difference as compared with control
2. P. ..	20.13		19.5	
3. K. ..	18.84		19.2	
4. P.K. ..	18.18		19.5	
5. N. ..	19.71		19.6	
6. N.K. ..	22.10	Significant increase over control	19.6	
7. N.P. ..	18.33	No significant increase over control	19.5	
8. N.P.K. .	23.76	Significant increase over 1, 3, 4 and 7	19.7	

Trial 2. Objective: To ascertain the effects of heavier applications of nitrogen as Sulphate of Ammonia on the yield of plant cane.

Stations: High rainfall area—Pool and Kendal Plantations.
 Intermediate rainfall area—Searles and Wotton Plantations.
 Lay out: Six randomised blocks.
 Variety: B.37161, plant canes.
 Treatments

1. Control.
2. 3 cwt. per acre of Sulphate of Ammonia.
3. 4 cwt. per acre of Sulphate of Ammonia.
4. 5 cwt. per acre of Sulphate of Ammonia.

In addition all plots, including Control, received Muriate of Potash at the rate of $1\frac{1}{2}$ cwt. per acre.

The yield results are given in Table II.

TABLE II.

Treat- ment	Yield in Tons of Cane per Acre (mean of 6 replicates)							
	Pool Pln.		Kendal Pln.		Searles Pln.		Wotton Pln.	
	Yield	Remarks	Yield	Remarks	Yield	Remarks	Yield	Remarks
1	33.65		26.60		20.60		15.61	
2	33.86	No signifi- cant increase over control	27.62	No signifi- cant increase over control	23.68	No signifi- cant increase over control	16.89	No signifi- cant increase ov control
3	36.11		27.01		22.31		19.76	
4	33.49		27.58		23.19		18.66	
								Significant increase ov 1 and 2 Significant increase ov control

Trial 3. Objective: To ascertain the effect of later and/or heavier applications of Sulphate of Ammonia on yield of cane and juice quality for ratoons plus different times of reaping.

Station : Pine Plantation.

Lay out: Twelve randomised blocks.

Variety : B.4098, first ratoons.

Treatments:

Sulphate of Ammonia
Cwt. per acre applied in

July

October

1.	..	..	0	0
2.	..	..	0	4
3.	..	..	0	6
4.	..	..	2	2
5.	..	..	2	4
6.	..	..	4	0
7.	..	..	4	2
8.	..	..	6	0

In addition, all plots received Muriate of Potash at the rate of $1\frac{1}{2}$ cwt. per acre.

In considering the results of this trial, it must be remembered that there was not sufficient rain for full use to be made of the extra nitrogen given. The detailed results are given in Tables III and IV.

TABLE III.

Yields in Tons Cane per Acre (means of twelve)					
4 Cwt. of Sulphate of Ammonia per acre			6 Cwt. of Sulphate of Ammonia per acre		
Time of Application			Time of Application		
July	October	Yield	July	October	Yield
0	4	7.27	0	6	7.62
2	2	8.66	2	4	8.25
4	0	9.75	4	2	10.26
			6	0	9.62

A difference of 1.54 tons between the means of twelve plots has a 20:1 chance of being due to treatment.

It will be noted that the application of 4 cwt. of Sulphate of Ammonia in July has given the highest yields, which corroborates the results of earlier trials. There has been no advantage in increasing the application of Sulphate of Ammonia from 4 to 6 Cwt. per acre under the conditions prevailing.

TABLE IV.

Sucrose Per Cent. in Juice (means of six)							
4 Cwt. Sulphate of Ammonia per acre				6 Cwt. Sulphate of Ammonia per acre			
Time of Application		Reaped on		Time of Application		Reaped on	
July	Oct.	19.2.48	30.3.48	July	Oct.	19.2.48	30.3.48
0	4	18.4	18.3	0	6	18.1	18.5
2	2	18.9	18.9	2	4	18.3	18.4
4	0	19.1	18.9	4	2	18.0	18.4
				6	0	18.2	18.3

The main conclusions from Table IV are:—

- The application of 6 cwt. of Sulphate of Ammonia has resulted in reducing the percentage of sucrose in the juice when compared with cane receiving 4 cwt. of Sulphate of Ammonia per acre.
- With the heavier application of Sulphate of Ammonia there is an increase of sucrose in the juice from the plots reaped later in the season. This is not evident in the plots receiving 4 cwt. Sulphate of Ammonia per acre.
- The plots receiving 4 cwt. of Sulphate of Ammonia in July gave cane with a higher percentage of sucrose than those receiving the same application in October. This trial has given interesting results and will be repeated in a more normal year.

Trial 4. Objective: To ascertain the effect of omitting potassic manures, for one year, on the yield of cane and sucrose content of juice on a soil which showed, according to analysis, that there was a sufficient reserve of exchangeable potash to grow a normal crop under local conditions.

Station : Groves Agricultural Station.

Lay out: "Student" A.B.B.A. (4 replications).

Variety: B.37161, first ratoons.

Soil : Exchangeable Potash = 0.0324%

Limiting value = 0.014% exchangeable potash.

Treatments:

O. No potash.

K. 1½ cwt. Muriate of Potash per acre.

In addition, all plots received Sulphate of Ammonia at the rate of 4 cwt. per acre.

The results are given in Table V.

TABLE V.

Treatments	Yield in Tons Cane per acre (mean of 4)	Per Cent. Sucrose in Juice (mean of 4)
O. ..	32.02	20.2
K. ..	29.11	20.2

As will be seen from the Table above, the omission of potassic manure did not have any deleterious effect either on the yield of cane or on the sucrose content of the juice.

Trials Laid out to be Reaped in 1949

Two trials with plant canes to test the yield effect of heavy applications of nitrogenous and phosphatic manures, in combination, plus a basic application of Muriate of Potash, have been laid down. One of these trials is at a high rainfall station in the red soils and the other at a station in the Scotland area.

The trials reaped at Pool, Kendal and Wotton plantations as plant canes in 1948 are being continued as first ratoons. Trials with identical manurial treatments to the above have been laid down for plant canes at Pool and Bannatyne plantations.

The trial at the Pine plantation with late and/or heavy applications of Sulphate of Ammonia on first ratoons plus different times of reaping is being repeated.

C.B.F.

Soil Conservation

Demonstrations in the methods of contouring were continued during the year. It is pleasing to note that some planters are gradually getting their fields under the contour system of cultivation, but much remains to be done. The advent of mechanical cultivation which enables the soil to be thoroughly cultivated during the dry season, has also brought with it the danger of excessive erosion, unless contour methods of cultivation are adopted. The cane hole system cannot be expected to cope with the excessive wash which will occur in a year of heavy rainfall on slopes which have been deep-ploughed during the dry season. The practice of ploughing up and down slopes should also be eliminated as far as possible, as this only tends to assist washing. Generally speaking, lands which have any appreciable slope are better left unploughed until a proper contour system is laid out.

Many of the fields on most plantations have been laid out for convenience, and their size and shape bear no relation to the drainage requirements of the area as a whole. Contouring is thereby made more difficult and less effective

than it could be, and mechanical equipment can only be operated with difficulty. Re-alignment of such fields is therefore imperative if the full benefits of contour cultivation and mechanical equipment are to be obtained.

In many places where contour demonstrations have been given, it has been noted that the soil in the 'bottoms' belongs to an entirely different group to that on the slopes. The bottom soils are almost invariably Group IV soils (Turner's classification) and require a cambered bed system if the best results are to be obtained.

Where the Group IV soils end and the Group II soils on the slopes begin is a matter for the planter to decide but, generally speaking, any part of a bottom which is subjected to flooding is better treated as a Group IV. Hand in hand with the various methods of cultivation goes the disposal of excess water. Sucks should be kept clean, and if a suck is found to be incapable of dealing with the water new sucks or other methods of disposal should be sought.

B. deL. I.

SECTION V.

GOVERNMENT LABORATORY

By

C. A. COPPIN,
Government Analyst

Analytical Work

(a) FOOD AND DRUGS LABORATORY

The total number of samples examined during the year for the various Government Departments and for private individuals was 1,103.

The number and distribution of samples dealt with annually for the past five years is set out in Table I.

	1943	1944	1945	1946	1947
Police Department ..	412	350	343	261	236
Customs Department ..	46	54	42	75	98
Public Works Department ..	12	8	15	30	7
Agricultural Department ..	110	316	176	46	179
Parochial Departments ..	265	371	334	319	333
Agricultural Society ..	33	62	58	62	56
Other Govt. Departments ..	39	76	80	40	41
Private Individuals ..	112	140	108	140	153
Total	1,029	1,377	1,156	973	1,103

Particulars of the various samples analysed in the Food and Drugs Laboratory for 1947 are:—

(i) *Police Department :*

Viscera, examination of poisons and exhibits ..	34
Coins and counterfeiting exhibits	Nil
Butters and cooking oils	25
Milk	122
Tea, coffee, cocoa, etc.	31
Animal feed	2
Rum	22
Total	236

Viscera, exhibits and Examinations. Large quantities of quinine used as an abortifacient were separated from portions of viscera submitted.

Alkaloids similar to those found in young Calabash fruit were separated from portions of viscera submitted for examination.

A mixture of Permanganate of Potash and glycerine were examined in connection with a case of incendiarism.

Portions of cast iron pipe showing traces of blasting gelatine were submitted for examination in connection with a case of using explosives unlawfully.

Experiments were conducted in a case of the scattering of shot from a shot gun.

A number of postage stamps were examined in a case of the unlawful surcharging of postage stamps.

Butters and Cooking Oils. All samples submitted were genuine.

Milks. Fifteen samples were found to be adulterated with added water.

Rum. Three samples were found to be below minimum legal strength.

Foods and Feeding-stuffs were genuine and of satisfactory quality.

(ii) *Customs Department:*

Petroleums	..	..	..	..	..	..	71
Miscellaneous	..	..	..	..	..	..	27

Petroleums consist mainly of gasoline for Specific Gravity determination and kerosene and fuel oil for Specific Gravity and flash points; all samples were satisfactory.

Complaints re corrosion of muffler exhaust pipes could not be traced to the leaded gasoline used but rather to inferior metal.

Miscellaneous samples were mainly items for classification within the Customs schedule. They were mainly protein and meat foods, wrapping paper, edible tallows, vapourising and dry-cleaning fluids, scouring powders, fruit essences and flavourings. Napthas and substances for denaturing alcohol were also submitted.

(iii) *Water-works Department :*

The usual quarterly analyses of water from the public supply were made. The usual high purity was maintained. Natural gas replaced the use of fuel oil for firing the boilers at the Belle Pumping Station. Calorific values of this high calorific fuel—over 1,000 B.T.U. per cubic foot—were checked, and tests to check the meters were conducted. Safety devices to safeguard sudden and interrupted supply were installed and inspected.

(iv) *Department of Agriculture :*

A large number of samples of soil have been collected and examined to determine the potash status and its variation since last determined (see Chemistry).

Examinations of the coal gas supply were made; the quality of this gas appears to vary considerably and to be deteriorating.

A number of imported feeding stuffs have been examined and periodic checks made to ensure that quality and mixing of the local B.A.F. have been maintained.

An investigation was conducted into the quality of the soap manufactured locally; a reasonable standard was maintained.

The moisture content of the yarn produced at the Spinning Plant was determined.

The water supply at the various Agricultural Stations was examined; reasonable purities for all domestic purposes were found.

(v) *Sanitary and Parochial :*

Pickled meats and corned products were submitted by the Sanitary authorities for report in doubtful cases.

The E.C. disinfectants produced by the Commissioners of Health, St. Michael, were regularly submitted and a uniform good quality maintained.

Three hundred and eighteen samples of milk were submitted by the Commissioners of Health of St. Michael. Fifty-two of them were adulterated by the addition of water.

(vi) *Agricultural Society :*

Samples of sugar, molasses and rum were analysed and examined for the Agricultural Society in connection with the prize Awards at their Annual Industrial Exhibition.

(vii) *Other Government Departments :*

A number of E.C. disinfectants as produced at the Barbados General Hospital were examined. Clays from Messrs. Barbados Welfare Limited, samples of water submitted by the Government of Dominica, Lactometers of the General Hospital were checked. Syrups and molasses were examined for the Molasses Control Board.

(viii) *Private Individuals :*

The following analyses were carried out during the year for private individuals :—

Sugars and molasses	..	..	..	34
Cane juices	..	..	..	37
Fertilizers	..	..	..	10
Food and Feeding stuffs	..	..	..	9
Instruments for calibration	..	..	..	16
Waters	..	..	..	15
Milks	..	..	..	21
Miscellaneous	..	..	..	11
				153

This Laboratory was taken over from Professor d'Albuquerque in 1929. Up to 1946 the average number of crop samples amounted to around 42,000, and the average surplus revenue to about £1,200.

Experiments conducted during 1946 conclusively indicated that an analysis on a composite daily sample provides as accurate a result as the numerous daily samples usually submitted. A more complete analysis showing the moisture content, the insoluble matter and the grain characteristics was desirable. This procedure was adopted during 1947. Samples examined during the year are —

Sugars

Complete analyses	..	..	495
Polarimetric tests only	..	..	2,047

Syrups

Polarimetric tests only	..	..	2,069
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Investigational Work

(a) *Government Factory.* The Government Factory did not operate during the year. The staff were seconded for Grow More Food control duties. Equipment and machinery were, however, maintained in working condition so that in the event of any food surpluses dehydration could be continued.

(b) *Pottery Experiments.* A ceramist was appointed and took up his duties during the latter part of the year. Collaboration with him continues, and experimental kilns and machinery are being constructed at Lancaster where natural gas is available. Visits were also paid during the year to the improved lime kiln at Apes Hill where high quality lime for the sugar industry is being produced.

(c) *Cotton Spinning Plant.* Planning and technical assistance was given in connection with the operation of the Cotton Spinning Plant.

SECTION VI

ENTOMOLOGY

BY

R. W. E. TUCKER,
Entomologist.

The year ending 31st March, 1948, has seen several changes in routine entomological work.

Predators of the pernicious scale insect *Aspidiotus destructor* and, it is hoped, of other scale insects have been introduced from Trinidad by co-operation with the branch service of the Commonwealth Bureau of Biological Control, Belleville, Ontario, Canada, which has been set up in Trinidad. At least one specie, *Azya trinitatis*, appears to be establishing itself, and it is hoped that a comprehensive plan to ensure full co-operation with the Trinidad branch of the Bureau will ensure the introduction and establishment of other beneficial parasites and predators.

A few of the more recent developments of synthetic insecticides have been obtained for trial in Barbados, and progress has been made with plans for selling a limited but essential range of insecticides by the Department in conjunction with its vegetable seeds sales service, without in any way damaging the commercial agencies held by numerous firms for insecticides, fungicides, etc.

Several enquiries have been made concerning latest developments in machine-operated spraying equipment, and it is hoped to obtain economically operated machines, suitable to local conditions and equipment, which will assist in raising more food, or rather in preventing the loss of food due to insect attack.

Diatraea saccharalis, the main pest of sugar cane, which is the principal crop of the Island, has been kept under control despite exceedingly adverse weather conditions which greatly reduced the sugar crop. The next most serious pest of sugar cane, namely the root borer *Diaprepes abbreviatus*, is however on the increase.

This pest (and the brown hard-back, *Clemora smithi*), was brought under control by co-operative work on the part of the planters in 1930—39; after several years of comparative neglect, it is now showing widespread prevalence, and though its damaging work has been made far more apparent by the effects of prolonged shortage of rain, it is unfortunately capable of reducing cane tonnages and ratooning capabilities even if good rains fall and produce growth which masks the effects of these pests.

A trial sample of 2 cwt. of Gammexane dust has been obtained for experiments, mainly in regard to cost and time of application, as a soil treatment for the control of these pests.

Samples of wettable D.D.T. dusts and of D.D.T. oil emulsion have been ordered for experimental purposes.

Arrangements have been made to collect insects for the renewal of the existing Departmental insect collection, and to record life histories of host plants where possible. The initial stages of this work have been hampered by the

extremely low rainfall in the past year, and by the intensive cultivation which has rendered suitable collecting grounds far more scarce than when the original collection was built up over twenty years ago. Details of insect pest occurrence and control are given below.

Small Moth Borer (*Diatraea saccharalis*)

During the year ended March 31st, 1948, a total of 344,225,900 egg parasites of *Trichogramma minutum* was bred and, after retaining the necessary proportion each week for maintaining the breeding cycle, a total of 301,197,600 was available for distribution to plantations. For the first time since this work began, some difficulty was experienced in getting the parasites distributed, because the level of *D. saccharalis* infestation has been reduced to an extent that, by comparison with former years, the 'dead hearts' seen in young canes is almost negligible. As the prevalence of 'dead hearts' in cane fields before and at the commencement of each season's parasite liberations is taken as a measure of *D. saccharalis* infestation, the opinion grew that it was a waste of labour and of money for plantations to fetch and distribute the parasites. Consequently, the normal annual co-operation on the part of plantations declined in 1947. The situation, and its future consequences, was explained to a meeting of planters held under the auspices of the Agricultural Society, and details were published in the local press in February 1948. As a result, co-operation was completely restored when the 1948 season liberations were commenced.

The annual determination at factories of the damage to reaped canes caused by *D. saccharalis* was started earlier than usual, namely in January 1948, and was concluded earlier than usual, because the short crop caused by drought was being reaped more rapidly than usual, and it was necessary to hasten the sampling in order to obtain the necessary random counts of plant canes in factory yards.

As in the previous year, only one variety, B.37161, was taken in samples, and the results showed an average percentage of 14.9 cane joints damaged by the moth borer *D. saccharalis*. The corresponding figure for the one variety only, i.e. B.37161, for the previous year was 12.8%.

In view of the abnormal climatic conditions prevailing in 1947-48 which reduced the efficacy of the parasite and produced short, light canes with short internodes in which each borer larva produced a greater proportion of damaged cane joints, this figure is considered satisfactory in view of the high susceptibility of B.37161 to moth borer damage, and in view of pre-control figures of borer damage.

Cane Varieties and *D. saccharalis*

This work has been continued as usual in co-operation with the Central Sugar Cane Breeding Station, and by means of the block of prospective or promising cane varieties, standard varieties, and old varieties which is maintained each year at Codrington for detailed entomological investigation. The former work correlates borer infestation with new cane varieties and one standard variety, and with rind hardness and other characteristics. The latter correlates *D. saccharalis* egg deposition with cane varieties, final infestation and with egg parasitism and destruction of *D. saccharalis* eggs by predators and other agencies affecting egg mortality.

Root Borer of Sugar Cane (*Diaprepes abbreviatus*) and Brown Hard Back (*Clemora smithi*).

The position regarding these serious root pests of sugar cane remains substantially as set out in the 1946-47 Report, with the addition that prolonged lack

of rainfall has made the external signs of root borer damage more pronounced, namely patchy or sickly growth, and dying out in patches, of both plant and ratoon canes. In all cases root borer, rather than brown hard-back, has been found to be the cause of the trouble, and there is no doubt from past experience and from some present plantation records, that considerable loss of cane tonnage has resulted.

Some planters still collect and destroy the adult beetles, but only united and sustained effort in this direction can be successful.

In the meantime, mechanised ploughing, ripping out and splitting of cane stumps and soil trials with Gammexane $3\frac{1}{2}$ per cent. dust are being relied on as controls. The Gammexane trials have had to be carried out in infested first ratoon fields which is a less practical test than incorporating the dust around the cane sett at planting time. The main consideration in any case will be the cost per acre of the treatment. The predator *Pyrophorous luminosus* of the brown hard-back *Clemora smithi* is still prevalent in certain areas of the Island over fourteen years after its introduction from Puerto Rico.

Sugar Cane Stem Borer (*Metamasius sericeus*).

With the practical disappearance of the variety B.35187 from large scale cultivation, the above pest has decreased in numbers and during the year under review, was of only minor importance.

Scarabee of Sweet Potato (*Euscepes postfasciatus*).

The position with regard to this and other food crop pests remains unchanged since the last Annual Report. Some spraying for pest control is still carried out, but climatic conditions have undoubtedly been the main factor in food crop production. A tractor drawn and operated spray machine with adjustable spray boom, and adapted for tree spraying, has been ordered for suitability and cost trials under local conditions. This is in keeping with the general trend towards mechanisation, and if results are satisfactory, may lead to an improvement in the control over insect pests in general, and those of food crops in particular.

Cottony Cushion Scale (*Icerya purchasi*).

The position with regard to the introduced predator *Rodolia cardinalis* is less clear this year than in the years since its introduction. Up to last year, it was always possible to find traces of *Rodolia* in the form of larvae or of cast-pupal skins in most cases of *Icerya* infestation. This year there have been very few cases found or reported of *I. purchasi* infestation, and in none of the cases investigated have traces of *Rodolia* been found; this may, however, only mean that both pest and predator are at a low ebb and that of the two, the predator is as is normally the case, harder to find.

Coconut Scale (*Aspidiotus destructor*).

The work of controlling this pest was put on a new basis during the year under review. In place of small shipments of *Cryptognathus nodiceps* from Trinidad, large shipments of *Azya trinitatis*, *Pentilia* sp. and miscellaneous coccinellids for the control of *A. destructor* and of various other scales of fruit and ornamental trees was arranged with the Trinidad branch of the Commonwealth Bureau of Biological Control, of which the headquarters is at Belleville, Ontario, Canada.

These shipments, organised by Dr. F. J. Simmonds, started in August, 1947 and ended in May, 1948. Although the latter date oversteps the actual period

under review, the project itself can hardly be divided arbitrarily in two, and is therefore treated here as a whole.

Altogether, thirteen shipments were made by air from Trinidad, the largest being 1,500 *A. trinitatis* received on March 3rd. The total of coccinellid predators of all species sent was 4,787, of which 3,592 were alive when received. The majority was *A. trinitatis*, and field recoveries have been made in sufficient numbers (bearing in mind that fully grown coconut palms, which form the majority, cannot be searched) to show that for the present at least the main introduced species *Azya trinitatis* is breeding in the coconut 'fringe'. Further, field searches will be made later to ascertain whether *Pentila* sp. and mixed species of coccinellids can be recovered from other scale-infested trees.

Wood Ant Control.

The demand for the inspection and treatment of Government buildings, churches, schools and private buildings, kept the Wood Ant Inspector fully occupied during the year.

A fair number of permanent 'repeat' inspections and treatments have also been asked for, and it has been found necessary to give instructions that some responsible person at each building shall be shown how to treat any new wood ant trails which are found, so that the demands on the Wood Ant Inspector's time can be kept within reasonable limits.

Fumigation.

During the year under review, six thousand one hundred and eighty-seven empty copra bags were fumigated with hydrocyanic acid gas for the Barbados Cotton Factory, and four fumigations were made of cargo-carrying auxiliary motor vessels.

Economic Zoology.

Zinc Phosphide baits are still being used for the control of rats in cane fields and warehouses. This work is now entirely in the hands of the Agricultural Society, and the Department acts in an advisory capacity only. Difficulties were experienced during the year under review in obtaining supplies of material, particularly of linseed oil, whilst shipments of Zinc Phosphide, ordered in ample time, were considerably delayed by shipping difficulties.

Metalddehyde continues to be the standard bait for slugs in plantation fields, vegetable gardens etc., but the supply has been irregular.

SECTION VII

PLANT DISEASES AND COTTON

BY

D. R. D. WILES,
Plant Diseases Inspector.

Mosaic Disease of Sugar Cane.

In accordance with Section 3(1) of the Mosaic Disease (Eradication) Act, 1943 (1943—22) three hundred and fifteen returns were received during the year disclosing the presence of one thousand two hundred and eighty infected holes, which were destroyed. These infected holes were reported from scattered areas in the parishes of St. Lucy, St. James, St. Thomas, St. Andrew, St. Philip and St. Michael. The careful selection of healthy planting material, as well as the increased acreage planted in the highly resistant variety B.37161, has greatly assisted in reducing the number of infected holes found.

Cotton

The planting of the cotton crop commenced at the end of the Close Season, which extended from the 1st April to the 30th June, 1948. Cotton planters who had been clamouring for an earlier planting season did not take advantage of this as they felt that the price offered for their crop was too low when compared with the prices offered for other crops. This price was, however, increased from twelve cents to sixteen cents per lb. for seed cotton, but unfortunately this information was received too late to have any material effect on the acreage planted. The price for the 1948 planting has been announced prior to planting date and it is hoped that this will give a fresh stimulus to the acreage to be planted. Seed to plant two hundred and forty-four acres was distributed but, due to adverse weather conditions, only one hundred and thirty seven acres were reaped at maturity, made up as follows :—plantations thirty-five, peasants one hundred and two; a yield of 49,399 lb. of seed cotton, which yielded 12,552 lb. of lint, was obtained.

	<i>Plantations</i>	<i>Peasants</i>
Seed cotton	22,128 lb.	27,271 lb.
Lint	5,660 lb.	6,892 lb.
Yield	25.57 %	25.27 %

Included in the above yield from plantations, is 3,761 lb. of seed cotton and 988 lb. of lint obtained from the Department of Agriculture's plots.

Cotton Selection.

The variety B. 1 continued to be used as a standard and it was decided to discard B.4204 and substitute B.4, a selection of a few years ago, in its place in the variety trials. Two variety trials were planted at Codrington using the following varieties :—B.4, B.4212, B.4301, B.4309, B.4310, B.4401, B.4404, B.4411, B.4413 with B.1 as standard. The reaping of these trials took place from mid-December to the end of March, when yields of 2,000 lb. of seed cotton and over were obtained per acre.

Selection of seed for the Progeny Row experiment was made from the following varieties :—B.1, B.4301, B.4404, B.4411, B.4413, B.4212, B.4309, B.4310 and B.4401. This experiment was planted at Codrington in September 1947. These selections were given fresh numbers, and eight of them have given yields of over 2,000 lb. of seed cotton per acre. These will be placed in the variety trials next year.

Two samples of lint of the Island's cotton crop, for small scale spinning tests, were forwarded to the Shirley Institute and the following report received—
 “The difference in strength of the yarns from the two samples is negligible; they are also similar to each other in appearance, though one was perhaps slightly less neppy than the other. The yarn strengths are similar to those previously found for samples of Barbados cotton.”

From the above report, it is observed that the standard of Barbados cotton lint is being maintained.

Cotton Pests and Diseases.

The presence of the defoliating worm, *Aletia argillaceae*, was observed at the usual time but was successfully kept in check by adequate sprayings with Lead Arsenate, the trees remaining full of undamaged foliage throughout the reaping season. No Pink Bollworm was observed in the field or at the Ginnery during the year, and it is hoped that this pest will not recur again.

Routine inspections of articles suspected to contain cotton from other West Indian islands were also carried out.

Plant Pest and Disease (Importation) Act.

Eleven permits to import planting material (Class C) were issued under this Act.

Plant Export Certificates.

Forty-six Plant Export Certificates were issued during the year.

Miscellaneous Inspections of Imported Planting Material.

234 packages of bulbs, rose trees, vegetable and flower garden seed	..	Examined and passed
16 packages of orchid plants	.. ..	do.
109 orchid plants	.. ..	do.
1 palm	.. ..	do.
1 Vanilla plant	.. ..	do.
2 packages of Ixora plants	.. ..	do.
6 Ixora plants	.. ..	do.
65 Hibiscus plants	.. ..	do.
4 Citrus plants	.. ..	do.
1 package Cactus plants	.. ..	do.
3,460 bags of decorticated cotton seed meal	.. ..	do.
63 bales of cotton lint	.. ..	do.
14 Plantain suckers	.. ..	Destroyed
8 Coconut plants	.. ..	do.

SECTION VIII.

ANIMAL HUSBANDRY

BY

A. G. MILL,
Livestock Officer.

In the Department.

During the year, much progress was made with the livestock improvement programme. The numbers of foundation stock at the Government Stations have been increased. It should be noted, however, that the livestock population of the Stations has been 'built up' mainly by the progeny from the 'Station' animals rather than by the purchase of animals as, generally speaking, good dams are still in demand in the colony and, consequently, are difficult to secure. Statistics are given in Table I.

TABLE I.
Census of Livestock at Agricultural Stations and Central
Livestock Station

Livestock				31st December, 1946	31st December, 1947
Bulls	..	..	..	16	17
Boars	..	..	..	13	14
Buck goats	..	..	..	14	16
Rams	..	..	..	9	10
Horses	..	..	..	8	5
Cows	..	..	..	37	36
Heifers and calves	..	..	..	35	39
Sows	..	..	..	25	28
Other pigs	..	..	..	67	74
Doe goats	..	..	..	7	9
Kids	..	..	..	6	2
Ewes and lambs	..	..	..	4	6
Mules	..	..	..	6	6
Donkeys	..	..	..	2	2
Cocks	..	..	..	—	4
Hens	..	..	..	—	5
Pullets	..	..	..	—	33
Cockerels	..	..	..	—	4
Chickens	..	..	..	—	18
Total	..	..	..	249	328

It should be noted, however, that several animals which have turned out to be below the standard required for the breeding programme were disposed of during the year.

Livestock owners continue more and more to make use of the stud animals on service at the Stations, including the Central Livestock Station. The numbers of services to livestock, other than Station livestock, for the year under review are contrasted with those for the previous year in the Table following :—

TABLE II.

Services to Livestock other than Government Livestock

	1946—47	1947—48
Cows	1,163	1,638
Goats	1,118	1,559
Sheep	775	693
Pigs	573	776

The service fees charged are as follows :—

Bulls (imported)	.. .. .	\$ 5.00
„ (grade)	.. .. .	.72
Boars (imported)	.. .. .	1.44
„ (locally bred)	.. .. .	.48
Bucks (imported)	.. .. .	1.20
„ (born to imported does)	.. .. .	.60
„ (grade)	.. .. .	.18
Rams .. .. .	.. .. .	.18
Stallion .. .. .	.. .. .	12.00 + \$12.00 per live foal thorough- bred mare + 50c. groom's fee.
„ .. .. .	.. .. .	12.00 half bred mares + 50c. groom's fee.

Stud animals were rotated among the Stations so that their services would be available to as large a number of livestock keepers as possible.

Livestock imported from abroad for use in the development programme are as follows :—

- One (1) Thoroughbred Stallion.
- One (1) Canadian Holstein Bull (presented to the Government by Mr. and Mrs. Greene of Toronto, Canada).
- One (1) British Friesian Bull
- One (1) Guernsey Bull
- One (1) Jersey Bull
- One (1) Essex Boar
- Two (2) Berkshire Boars

Two (2) British Alpine Goatlings
 Two (2) „ Saanen „
 One (1) Saanen Goatling
 Three (3) British Alpine Males
 Two (2) „ Saanen Males
 One (1) Saanen Male
 Two (2) R.I.R. Cockerels
 Four (4) R.I.R. Pullets
 Two (2) W.L.H. Cockerels
 Two (2) W.L.H. Pullets

The Livestock Officer goes on leave in the United Kingdom in the 1948-49 year and during his visit to the U.K., it is proposed that he should select a further number of animals for this Colony.

The quantity of milk produced at the Central Livestock Station and the Agricultural Stations for the year under review amounted 74,074 pounds. The balance of this milk, after deducting the quantity fed to young animals at the Stations, was disposed mainly to public Institutions such as the Mental Hospital, General Hospital, Maternity Hospital and Elementary Schools. The demand for milk in the Colony far exceeds the supply but, nevertheless in disposing of surplus milk produced at the Government Stations care is taken to disrupt as little as possible the business of private dealers in milk. The cows at the Stations have been 'tuberculin' tested.

It is proposed in the near future to milk the dairy cows at the Central Livestock Station by machine. A milking machine has been imported for the purpose and is being installed. Not only should this method of milking prove more economical than hand milking but it will also be more hygienic and dependable.

During the year, several animals of good strains and a larger number of chicks of imported and good local strains of the R.I.R. and White Leghorn varieties were made available to livestock keepers from surplus stock at the Stations.

Locally produced fodders are, generally speaking, low in protein with the result that large quantities of expensive imported concentrates, which are also difficult to obtain, must be fed to livestock to offset this deficiency in protein. The high costs and irregular supply of these concentrates seriously affect the economy of livestock keeping and milk production. The growing of various types of imported fodders of high protein content is being experimented with in an effort to find a natural substitute for these concentrates. In addition to this, the year has been an exceptionally dry one so that even the local fodders are in shorter supply than they normally would be.

Large scale irrigation projects are being laid down, however, and available green fodder was ensiled to bridge the gap until green fodder shall again be available. Should experiments in the cultivation of fodder crops which would replace or greatly reduce the use of imported concentrated feeds prove successful, a most important step will have been taken towards the wide establishment of animal husbandry as an economical industry.

Extension Work

With the wider adoption of mechanical cultivation and transport, cattle as draft animals have almost entirely disappeared from plantations. The effects of this disappearance have been mainly —

- (i) A consequent reduction of available meat supplies

- (ii) The loss of valuable manure to the land.
- (iii) Less employment for labour.

Earnest efforts have been made to persuade plantation owners to substitute dairy for working cattle. The results have so far been pleasing but the disposal of dairy produce constitutes a very real difficulty and, unless this difficulty is overcome, will prove to be a severe handicap to the plan. Considerable thought is being given to ways and means of assisting dairymen with the disposal of their produce, and plans are being made to combat the difficulty which is one of distribution rather than of over-production. In its solution may be the future of the dairy industry.

Silage

As an encouragement to local dairy keepers, the Department of Agriculture undertook the supervision of the erection and filling of a number of silos. Two types of silos have been erected, viz:— pit silos and wire-mesh and sisal-kraft silos.

Export Markets

Until the local needs are satisfied, the export of dairy cattle has been prohibited.

The keeping of African hair sheep (black-belly) has always been favoured by local stockmen. This variety is considered most suited to local conditions and to the climates of the other West Indian islands. The establishment of export markets with other W.I. islands has been fostered by the Department of Agriculture which has itself undertaken the shipment of animals with a view to establishing a market for these sheep. The demand for these animals still exceeds the supply, however, and care is taken by exercising a measure of control in the export of these animals to safeguard local requirements.

The importation of animals of new blood lines from the United Kingdom has added to the enthusiasm of local goat keepers. The goat population has increased rapidly with the result that several animals are available for export, and export of a limited number is being permitted. Here again the Department of Agriculture is assisting with the establishment of export markets and has been responsible for placing opportunities for shipment of animals in the way of the Goat Society.

Some increase has been observed in the pig population, but the demand is still far in excess of the supply. The waiting lists of prospective purchasers of young animals at the Agricultural Stations are in themselves an indication of the considerable shortage in the supply of these animals.

SECTION IX

FISHERIES

BY

D. W. WILES,

Fishery Officer

With a view to keeping before the Fisheries Advisory Committee matters of fishery development, a programme Report was prepared and presented, in which the following formed its basis :—

- (1) The expansion of the fishing fleet.
- (2) The registration of the fishing fleet and fishermen.
- (3) The establishment of a Fishery Experimental Station in the metropolitan area.
- (4) Marketing developments.
- (5) Collection of statistics.
- (6) Establishment of beach rights for the benefit of fisher folk.
- (7) Improving roads and paths to certain of the above areas.
- (8) Improving of conditions at certain landing beaches.
- (9) Removal of customs duty on fishing gear.
- (10) Establishment of proper cold storage.
- (11) Establishment of co-operatives with a view to —
 - (i) Co-operative marketing,
 - (ii) „ buying,
 - (iii) „ insurance of boats.

This programme endeavoured to place before the Committee the importance of certain work already in operation, as well as to point out the need of furthering those points already set out under the Fisheries Comprehensive Scheme which was included in the Island's Ten Year Plan. The developments under the several sub-headings can now be reviewed.

(1) The Expansion of the Fishing Fleet

Throughout the period under review, the fishing fleet of the Island continued to expand at almost every fishing village and the Committee assisted through loans, with the building of twenty-nine new flying fish boats. This makes a total of one hundred and seventeen new fishing boats built through the aid of loans to date. Minor improvements have been incorporated in some of these boats but it is considered that no radical change should be made before the proposed improved type of flying fish boat is built under this Department's supervision.

(2) The Registration of the Fishing Fleet and Fishermen

Regulations were made by the Governor-in-Executive Committee under Section 5 of the Fishing Industry Control Act, 1947, and received final approval by the Legislature on 28th October, 1947. These Regulations provide for the registration of the fishing fleet of the Island and had been in force from 1st July, 1947, when they had actually been passed by the Governor-in-Executive Committee.

Placards were posted in all fishing areas notifying fishermen of the requirements of these Regulations as well as soliciting the voluntary registration of

every whole-time fisherman who was given a registration card. As a result of the above, boats were registered at twenty-eight different fishing areas. The following schedule shows the extent of this registration :—

Registration of Fishing Boats to 31st March, 1948

Parish	Boats over 20 ft. long	Boats under 20 ft. long	Pot and Sea-egg Boats	Canoes	Total
St. Michael ..	111	32	19	6	198
Christ Church ..	50	46	49	—	137
St. Philip	56	52	41	—	127
St. John	10	21	4	—	35
St. Joseph	4	26	2	—	32
St. Lucy	57	15	26	—	78
St. Peter	29	12	51	—	92
St. James	62	22	82	—	166
Totals ..	359	226	274	6	865

The registration of fishermen, which is a wholly voluntary movement, continues and up to date (31st March, 1948) seven hundred and sixty fishermen have been registered.

(3) Establishment of a Fishery Experimental Station

During the period under review, plans for the setting up of a Fishery Experimental Station on property owned by Messrs. Cable and Wireless, Ltd. at the Reef, St. Michael, have been forwarded. An agreement has been reached with Messrs. Cable and Wireless, Ltd., by which Government will take over this property from January, 1949. Plans and specifications for the construction of a Fishery Experimental Boat have received the approval of the Fisheries Committee, and advertisements calling for tenders for the construction of this boat have been published.

(4) Marketing Developments

(a) *Oistins*. According to recommendations by the Fisheries Committee, the Government have agreed to purchase certain property in Oistins for the erection of a fish market. This matter is receiving final attention.

(b) *Speightstown*. The Fisheries Committee also recommended to the Government the erection of a fish market at Speightstown on the site now occupied by the old fish shed, together with some of the surrounding land. This matter has been referred to the Vestry of St. Peter who administer the present fish shed.

(5) Collection of Statistics

With the Bridgetown Fish Market having completed its first eighteen months of operation, it is now possible to arrive at a more accurate estimate of the Island's total production of fish and it is interesting to note the following observations :—

For the period under review 1,447 boat catches, totalling 186,394 lb. of fish, were recorded during official hours (8.00 a.m. to 6.00 p.m.). This fish,

sold at an average price of 19½c. per lb., is valued at \$35,341.00. It is considered that as fish is marketed at nine other points within the St. Michael area, six times this amount is again sold in St. Michael. It is also estimated that two and half times the amount of fish landed in the St. Michael area (but outside the Market) is again landed throughout the Island. This gives a total value of \$771,302.00.

Allowances have been made for difficult fishing periods on the east coast. This estimate of the Island's fish production does not include deep sea fish landed by two schooners which amounted to 170,000 lb., valued at £8,500. The following is a summary of the value of the Island's fishery:—

Total value of fish marketed through the Bridgetown Fish Market	\$ 35,341.00
Value of fish landed in St. Michael, excluding that marketed through Bridgetown Fish Market	202,046.00
Value of fish in other parts of the Island, excluding St. Michael's catches	505,115.00
Estimated value of Island's fish pot industry	12,000.00
Estimated value of Island's sea egg industry	12,000.00
Estimated value of Island's turtle & other miscellaneous fisheries	4,800.00
	\$771,302.00
Total estimated value of fisheries of all types	£160,687

(6) Establishment of Beach Rights

In pursuance of the decision to secure portions of beach lands at various points around the coast for the object of facilitating fisher folk's activities at fishing areas, negotiations are in progress at three areas in respect of boundaries, ownership and legal transference of these plots. Further investigations are being carried out at other points.

(7) Improving Roads and Paths to certain Beaches

Investigations are being carried out to determine exact ownership of certain lands for which it is desired to construct and repair roads and paths to beaches. Surveys of these lands will be arranged as soon as possible.

(8) Removal of Customs Duty

Consideration was given to this matter which is of great importance to the Island's fishery. It is hoped that it will be possible for the Government to permit the importation of certain classes of fishing gear free of duty.

(9) Cold Storage

Matters of cold storage were discussed by the Fisheries Committee and prices for space for the storage of fish were submitted by the Barbados Ice Company, Limited. Due to the high prices quoted and the time limit of 4.00 p.m. for fish delivery, this venture had to be dropped and left in the hands of private enterprise.

(10) Insurance

During the year arrangements have been made with Messrs. J. B. Leslie & Co., Ltd., representatives of Lloyd's, to cover deep-sea fishing boats with insur-

ance. The insurance is a corollary to the registration of the fishing fleet and offers a protection which has never before been enjoyed by boat owners. The Fisheries Committee have decided to extend loans to fishermen for insurance purposes and many boat owners have taken advantage of this new security. During registration, each fishing boat registered was valued and insurance was fixed at four per cent. of this valuation for a ten month coverage and five per cent. for an annual covering.

(11) Meetings of Fisheries Advisory Committee

During the year, four meetings of the Fisheries Advisory Committee were held at which the following were dealt with :—

- (a) Financial Statements.
- (b) Loans to fishermen.
- (c) Regulations to accompany Fishing Industry Control Act, 1947.
- (d) Insurance of fishing boats.
- (e) Fishery Experimental Station.
- (f) Removal of customs duty.
- (g) Experimental gear.
- (h) Backward accounts.
- (i) Registration of fishing fleet and fishermen.
- (j) Other matters in connection with the Fisheries Experimental Station.

Financial Statements. Every month, financial statements showing the exact position of funds voted for the issuing of loans to fishermen and boat owners by the Legislature were presented for the information of the Committee. These were considered and discussed by the Committee.

Loans to Fishermen. During the period under review, one hundred and forty-seven loans were submitted by the Fishery Officer and approved by the Fisheries Committee; these loans amounted to \$16,226.46 and were sanctioned for assistance with twenty-nine new boats and repairing and fitting others. Actual expenditure in respect of loans during the year amounted to \$16,323.00, making a total of \$55,057.67 expended over all loans to date.

Repayments for the year totalled \$7,855.58, bringing the total repaid to date over all loans issued to \$27,030.27. Interest collected on loans for the period amounted to \$186.19, making a total of \$309.10 of interest collected to date.

Backward payment of accounts was reviewed by the Committee, and certain methods of collection were decided on; in most cases results were satisfactory.

Eight fishing boats were lost at sea during the year; of these, one was completely wrecked after breaking its chain and driven ashore. Two fishermen lost their lives as a result of these accidents. Three boats were salvaged through the help of this Department during the year. One was sunk in the approaches to Martin's Bay and the other two in Conset's Channel. All three received damages of varying degrees.

During the latter part of 1947 and up to March 1948, very rough seas were observed at most of the eastern fishing areas and although much damage has been done at the various beaches, more fishing days were enjoyed by the fishermen of Martin's Bay than in any previous year, and during their difficult period of operating only one loss was recorded.

Deepening and Widening of Channels. Operations were commenced at Martin's Bay, St. John, with respect to the deepening and widening of this chan-

nel. Vast quantities of shoal were blasted away and rubble tipped into deeper water beyond the draft of boats. This work was carried out with the assistance of a foreman from Bridgetown and his assistant and the co-operation of a team of men selected from the Martin's Bay area.

Operations were next shifted to Crab Hill, St. Lucy, to remove large portions of overhanging shoals which were a menace to boats of this area. This work was carried out with a foreman from Bridgetown and his assistant, together with a crew of men picked from the Crab Hill area. These operations lasted for three weeks and have proved to be of great assistance to boats operating from Crab Hill.

Operations were next removed to Skeet's Bay, St. Philip, where large shoals were blasted into rubble with the object of creating an easier mooring for boats. The results have proved of great benefit to the fishermen of this area.

Accidents at Bathsheba have been fewer than in previous years, but some loose rubble which has collected in parts of the channel and on the surrounding reefs will receive attention during the approaching hurricane season.

Boats drifted to Neighbouring Colonies. Two boats, which had drifted to the neighbouring Islands of St. Vincent and Martinique, were recovered through the kind co-operation of the Captain of the schooner 'Bel Queen' and the British Consul at Martinique.

Gill nets for the capture of flying fish were introduced to the fishermen and several days' experiments were carried out with encouraging results. On occasions when fish were scant, the nets returned over seventy-five per cent. of the day's catch, while on days when fish were plentiful large catches were taken in very short time. It is felt that the Gill Net has more than proved itself as an added method of capturing the flying fish, and more and more fishermen are becoming interested in this piece of gear.

The Legislature passed a Resolution for the sum of £3,000 for the Rehabilitation and Extention of the Fishing Industry to supplement the other Resolutions already in operation. The Legislature also passed a sum of £24,480 to meet the capital cost of the Fisheries Comprehensive Scheme for Island-wide fishery developments, and for the recurrent expenditure to the 31st March, 1948.

Matters concerning marketing developments and beach shelters have been receiving attention and plans and specifications for the Fisheries Experimental Boat have been prepared, and advertisements calling for tenders have been published.

Other matters in connection with this wider development are receiving constant attention and continue to make progress.

SECTION X

CO-OPERATION

BY

J. M. CAVE,
Co-Operative Officer.

Visit to Jamaica.

The Co-operative Officer paid a visit to Jamaica from 30th June to 30th July, 1947. During this visit, various types of co-operatives were studied with especial attention being paid to the techniques employed in starting and organising societies. The Co-operative Officer also had the opportunity of studying the work of Jamaica Welfare Limited, and the Government Departments and other bodies carrying out co-operative development there.

Co-operative Study.

From 15th September, 1947 to 3rd April, 1948, the Co-operative Officer was out of the Island attending a six month course in the United Kingdom. This course, arranged by the Colonial Office and the Co-operative Union, Limited, was held at the Co-operative College, Stanford Hall, Loughborough, and eleven other members of Colonial Co-operative staff were in attendance. The course provided opportunity for the study of Colonial Co-operative Law and development as well as the British Co-operative movement, Co-operative Economics and Book-keeping.

While in the United Kingdom, the Colonial students visited many places in England, Scotland and Wales and saw various types of co-operatives functioning.

Co-operation.

Groups of peasants have continued to co-operate with varying degrees of success for the collective purchase of fertilizers, insecticides and stock feed. St. Patrick's Roman Catholic Church has organized a Savings Union among its members which is progressing well.

The problem of organising groups of small holders in order to provide irrigation facilities by co-operation is receiving very careful study and consideration at present.

During May and June, 1947, several 'cottage' meetings were held by the Peasant Extension staff of this Department. The Co-operative Officer attended many of these meetings, at which information on co-operatives was given.

During the year, apart from the visit to Jamaica and the course of study in the United Kingdom, the Co-operative Officer also had discussions with Mr. B. J. Surridge, O.B.E., Co-operative Adviser to the Secretary of State for the Colonies, Miss D. Ibberson, Social Adviser to the Comptroller for Development and Welfare in the West Indies, and many others responsible for co-operative development in the Colonies.

SECTION XI

EXPERIMENTAL COTTON SPINNING PLANT

BY

N. A. PHILLIPS,

Manager.

In spite of the many difficulties which beset it from the start, the Experimental Cotton Spinning Plant has made very satisfactory progress during the year. Quite a few of these difficulties still exist, but they are not insurmountable.

During the first quarter of the year, coarse yarns—10's, 15's and 16's counts—were spun. This was done because:—(1) the rusty and oily condition of the machines prohibited spinning anything finer, (2) the five female operatives (tenders) were, as yet, too unskilled to be able to manipulate the machines properly, and their fingers lacked the dexterity which the spinning of finer yarns requires, and (3) the Ring Spinning Frame needed more accessories. As was to be expected, the yarns produced at this time were of indifferent quality, but they were twisted into five different grades of cord. A market has since been found for this cord.

By about the middle of May it was decided that conditions were favourable, and the machines were set to produce a finer grade of yarn—24's count. The Jamaica Knitting Mills, Limited, were prepared to purchase comparatively large quantities of this yarn if its quality proved to be sufficiently good. They were subsequently satisfied with the quality of the samples sent them but wanted the yarn on paper cones. The Plant could not produce this type of package.

Mr. N. H. Pomfret, a Lancashire Cotton Spinner, who had had the privilege of producing the first cotton yarn to be spun in Barbados, and who had been responsible for both the technical control of the machines and the training of the operatives, left Barbados on the 24th May, the extension of his contract having expired. The Plant's Manager now took over the duties formerly performed by Mr. Pomfret.

Due to the difficulty of obtaining a fresh supply from England, the stock of banding for driving the spindles on the Ring Spinning Frame was now very low—negotiations were also going on with the Knitting Mills at Jamaica—and until these problems should be resolved, it was decided to operate the Plant at minimum capacity. To have closed it would have necessitated spinning coarse yarns at the re-start until the machines had taken on a fresh polish, and the staff regained their lost confidence.

Eventually, Jamaica accepted the yarn on paper tubes (cheeses) and, as soon as the spindle banding arrived, the Plant began to produce at full capacity. The first shipment of yarn was delivered to the Agents on the 25th of September; the total weight of 24's count yard despatched to the Jamaica Knitting Mills during the year was just over three tons.

Machinery

The general performance of the machines under local climatic conditions has been far better than was at first expected. The high relative humidity of the atmosphere whenever there is a reasonably heavy fall of rain during the night or

over the week-end makes starting difficult. Stoppages due to broken parts have been normal. Short-period failures of the electric supply have been frequent, giving the operatives extra work and lowering production.

There are one hundred and sixty-nine top rollers, each carrying two leather covers ('hots') in the use daily at the Plant. A supply of roller varnish has done much to lengthen the useful life of these 'hots' and to reduce the time lost in starting during rainy weather.

The second revolving Flat Carding engine has been erected and clothed with wire fillet by the Plant's mechanics under the Manager's guidance. This machine has been put into use and is performing satisfactorily.

Staff

The mechanical section, consisting of one man and a lad, assisted by the Manager, has not only maintained the machines in working order but has carried out the necessary alterations to increase the efficiency of the scutcher and the two carding engines, so that a reduction in the amount of waste made has been effected during the last quarter of the year.

The operative (tender) section employs five girls. One operates two carding engines, one drawing frame, and assists with the recovering and varnishing of the leather-covered rollers. The second operates the slubber-intermediate frame and the roving frame, the third the ring spinning frame, the fourth the quick traverse winding frame, and the fifth the ring doubling frame. The two mechanics operate the scutcher in addition to their other duties.

Each tender knows enough about the other machines to give assistance in operating them when necessity demands. There is a demand whenever a completed set of bobbins or cops has to be replaced with empty ones and the frame is re-started ('doffing and gaiting up'). To do this efficiently, the ring frame requires at least four persons, therefore from three to five times per day (according to the count of the yarn being spun) three girls have to stop their machines and assist the one in charge of the ring frame. Because the ring frame has a much lower production capacity than any of the other machines, the Plant's production of finished material is unaffected by these stoppages. Had the Plant been a balanced unit, the maintenance of an additional staff of girls, known as 'doffers and gaiters', would have been indispensable.

The work of the staff has been steady and quite satisfactory. An Overseer was appointed to understudy the Manager, and took up his duties on the 15th of March.

PART IV.

FINANCIAL STATEMENT

Expenditure and Revenue for the Financial Year 1947—48

EXPENDITURE

	£	s.	d.
Personal Emoluments	13,291	19	6
Travelling Allowances	2,020	15	3
Exhibition Expenses	149	19	7
Expenses in Control of Cotton Diseases (Salaries of Sub-Inspectors)	293	15	0
Unforeseen Contingencies	—	—	—
Extra Clerical Assistance	210	0	0
Stationery	123	19	3
Library	89	10	4
Destruction of Rats and Beetles	217	10	0
Insurance of Livestock	57	3	0
Experiment Stations and Botanic Station	6,622	19	8
Chemical Laboratory	1,181	15	3
Entomology	2,061	10	1
Science Teaching at Harrison College	1,933	0	2
Analyses of Commercial Sugars	466	5	11
Upkeep of Government Lands	19	6	6
Cost of Living Allowance	3,435	12	6
	£32,175	2	0

REVENUE

	£	s.	d.
Sale of Ornamental Plants	128	2	5
Sale of Produce from Codrington Experiment Station	768	5	11
Fees for Analyses of Sugars and Molasses	1,493	4	0
Fees for Analyses of Miscellaneous Samples &c.	57	18	6
Sale of Vegetable Seeds, Insecticides, used Wheat &c.	1,200	7	2
Miscellaneous Receipts	18	5	3
Fumigation of Bags &c.	14	16	8
	£ 3,680	19	11

PART V

AGRICULTURAL LEGISLATION.

1. Act 1947—13. 3rd July, 1947.

An Act to impose a levy on sugar and fancy molasses manufactured in this Island, to create funds for the benefit of the sugar industry of this Island, and to provide for the administration of such funds.

This Act provides for the establishment of certain special funds for the benefit of the sugar industry and the welfare of the labour workers engaged in the industry, such funds to be built up by means of a levy at an agreed rate per ton of sugar produced.

The special funds established are :—

(a) Capital Rehabilitation Reserve Fund,

(b) Price Stabilization Reserve Fund,

(c) Labour Welfare Fund,

the purposes of which are, respectively : —

(a) to provide a source of funds to meet, in part, the cost of major renewals and improvements of factory and plantation machinery and equipment;

(b) to provide a reserve which can be utilised if necessary to mitigate the adverse effect of a reduction in the price of sugar;

(c) to provide funds to meet the cost of capital works for the improvement of the welfare of labourers engaged in the sugar industry.

2. 1947—31. 24th September, 1947.

An Act to amend the Department of Science and Agriculture Act, 1925 (1925—5) as amended by the Department of Science and Agriculture (Amendment) Act, 1946 (1946—32).

This Act repeals Sub-section (1) of Section four of the Principal Act as contained in paragraph (a) of Section nine of the Civil Establishment (Miscellaneous Provisions) Act, 1944, and amended by the Department of Science and Agriculture (Amendment) Act, 1946, and substitutes a new Sub-section which empowers the Governor to appoint as Head of the Department a Director of Agriculture at a salary of one thousand one hundred pounds per annum, and such other officers and servants and at such salaries as shall be approved from time to time by special resolution of the Legislature. The reason for this amendment was that it was considered, in keeping with present practice, that the staff of the Department should not be set out seriatim in the Act as at present but provided for from time to time by special resolution of the Legislature

PART VI.

LIST OF PUBLICATIONS ISSUED BY THE DEPARTMENT OF SCIENCE AND AGRICULTURE AND B.W.I. CENTRAL SUGAR CANE BREEDING STATION FROM 1925 TO DATE.

Department of Science and Agriculture

Reports :

- Report on the Sugar Cane Experiments for the Season between 1923-25, by
J. P. D'Albuquerque, M. A., F.I.C., F.C.S.
Report on the Sugar Cane Experiments for the Season between 1924-26 by
J. P. D'Albuquerque, M.A., F.I.C., F.C.S.
Report on the Department of Agriculture, Barbados, 1925-26.
Annual Report of the Department of Agriculture, 1926-27.
Report of the Department of Agriculture, Barbados, 1927-28.
Annual Report of the Department of Science and Agriculture, 1928-29.
Report of the Department of Science and Agriculture, Barbados, 1929-30.
Report of the Department of Science and Agriculture, Barbados, 1930-31.

Agricultural Journals :

- Vol. 1 No. 1, An Investigation into the Evolution of Sugar Cane Varieties by Breed-
Jan., 1932 ing in Barbados, 1887-1925, with a discussion on the Application
 of the Findings to the present day Scheme of Work, by A. E. S.
(out of print) McIntosh, B.Sc., Ph.D.

 A Survey of the Position of *Phytalus smithi*, Arrow, and its Natural
 Enemies in Barbados, by R. W. E. Tucker, M.A., B.Ed.

 The Scientific Control of Pan Boiling, by S. J. Saint, M.Sc., Ph.D.

 The Status of *Trichogramma* as a control of *D. saccharalis* in Barbados,
 by R. W. E. Tucker, M.A., B.Ed.

 The Inversion of Sucrose in Syrup Manufacture, by C. A. Coppin,
 B.A.Sc.

 Some Aspects of the Flora of Barbados, by F. Hardy, M.A., F.G.S.

 Memorandum on the Cotton Situation in Barbados.

Vol. 1 No. 2, Report on the Work of the Department of Science and Agriculture for
April, 1932 the Year Ending June 30, 1932.

 Some Aspects of the Flora of Barbados (Contd.) by F. Hardy, M.A.

Vol. 1 No. 3, Report of the Geneticist for 1931-32.
July, 1932 Some Aspects of the Flora of Barbados, by F. Hardy, M.A.

Vol. 1 No. 4, A Discussion of the Results of Manurial Trials carried out on Sugar
Oct., 1932 Cane in Barbados, 1928-32.

 Some Aspects of the Flora of Barbados, by F. Hardy, M.A.

Vol. 2 Nos. 1 Report on the Work of the Department of Science and Agriculture for
and 2, April, the Year Ending June 30, 1933.
1933 Some Aspects of the Flora of Barbados (Concluded), by F. Hardy, M.A.

Vol. 2 No. 3, Report of the Geneticist for the Year 1932-33.
July, 1933

- Vol. 2 No. 4,
Oct., 1933 Manurial Trials with Sugar Cane, by S. J. Saint, M.Sc., Ph.D.
Rate of Egg Deposition of *D. saccharalis* and Extent of Larval Mortality in Canefields and their Relation to Control of *Diatraea* by *T. Minutum*, by R. W. E. Tucker, M.A., B.Ed.
- Varietal Factors in Cane which may influence extent of Oviposition by *D. saccharalis* and a possible method for Determining Varietal Susceptibility to Borer attack, by R. W. E. Tucker, M.A., B.Ed.
- Vol. 3 No. 1,
Jan., 1934 Sugar Cane Growth Measurements in Barbados, by A. E. S. McIntosh, B.Sc., Ph.D.
- A Contribution towards the Solution of the Problem of Control of the real mortality of *D. saccharalis* due to egg parasites, egg predators, natural larval mortality, larval parasitism and other factors, by R. W. E. Tucker, M.A., B.Ed.
- Vol. 3 No. 2,
April, 1934 Report on the Work of the Department of Science and Agriculture for the year ending March 31st, 1934.
- Vol. 3 No. 3,
July, 1934 The Coral Limestone Soils of Barbados, by S. J. Saint, M.Sc., Ph.D.
- Vol. 3 No. 4,
Oct. 1934 Report of the Geneticist for the Year 1933—34.
A further Contribution to the Analysis of Field Data on *D. saccharalis* in Barbados, by R. W. E. Tucker, M.A., B.Ed.
- Vol. 4 No. 1,
Jan., 1935 Manurial Trials with Sugar Cane.
(out of print) The Control of *D. saccharalis* in Sugar Cane in Barbados by frequent liberation of Mass-reared *Trichogramma*, by R. W. E. Tucker, M.A., B.Ed.
- Vol. 4 No. 2,
April, 1935 Report on the Work of the Department of Science and Agriculture for the Year Ending March 31st, 1935.
- Vol. 4 No. 3,
July, 1935 Report of the Geneticist for the Year 1934—35.
- Vol. 4 No. 4,
Oct., 1935 Manurial Trials with Sugar Cane.
Sugar Cane. A Summary of Plantation Variety Yield Returns for Season 1933—35, by A. E. S. McIntosh, B.Sc., Ph.D.
- Juice Analyses in Relation to the Fertilizer Requirements of Barbados Soils, by S. J. Saint, M.Sc., Ph.D.
- Vol. 5 No. 1,
Jan., 1936 Parasites Introduced into Barbados for Control of Insect Pests, by R. W. E. Tucker, M.A., B.Ed.
- (out of print) Investigations into the Use of the Zeiss Hand Refractometer, by A. E. S. McIntosh, B.Sc., Ph.D., and G. C. Stevenson, B.A.
- Vol. 5 No. 2,
April, 1936 Report on the Work of the Department of Science and Agriculture for the Year Ending March 31st, 1936.
- Vol. 5 No. 3,
July, 1936 The Yield of Sugar Cane in Barbados in 1936.
Report of the Botanist for the Year 1935—36.
- Vol. 5 No. 4,
Oct., 1936 A Preliminary Investigation into Cane Varieties and Infestation by *D. saccharalis*, by R. W. E. Tucker, M.A., B.Ed.
- (out of print)
- Vol. 6 No. 1,
Jan., 1937 Manurial Trials with Sour Grass, by S. J. Saint, M.Sc., Ph.D.
(out of print) Manurial Trials with Sugar Cane, by S. J. Saint, M.Sc., Ph.D.
Sugar Cane Spacing Experiments, by G. C. Stevenson, B.A.

- Vol. 6 No. 2, April, 1937 (out of print) Report on the Work of the Department of Science and Agriculture for the Year Ending March 31st, 1937.
- Vol. 6 No. 3, July, 1937 The Yield of Sugar Cane in Barbados, 1937. Report of the Botanist for the Year 1936—37.
- Vol. 6. No. 4, Oct., 1937 (out of print) The Control of Scarabee in Barbados, by R. W. E. Tucker, M.A., B.Ed. Larval Dispersion of *D. saccharalis*, by R. W. E. Tucker, M.A., B.Ed.
- Vol. 7 No. 1, Jan., 1938 Manurial Trials with Sugar Cane, by S. J. Saint, M.Sc., Ph.D. An Account of an Experiment to Determine the Efficiency of two Weed-Killing Sprays. Experiments with the Dwarf Banana. String Bean Variety Trial, Codrington, 1937. Experiments in the Use of Hormomone A to Stimulate Rooting and Establishment in Cuttings of Ornamental Plants.
- Vol. 7 No. 2, April, 1938 (out of print) Report on the Work of the Department of Science and Agriculture for the Year Ending March 31st, 1938.
- Vol. 7 No. 3, July, 1938 The Yield of Sugar Cane in Barbados in 1938. Report on Sugar Cane Breeding and Seedling Testing for the Year 1937—38, by A. E. S. McIntosh, B.Sc., Ph.D.
- Vol. 7 No. 4, Oct., 1938 (out of print) Experiments in the Growing of Tomatoes and Shipment to Canada. Co-operative Sugar Cane Spacing Experiments. Sweet Potato Storage Experiments.
- Vol. 8 No. 1, Jan., 1939 Manurial Trial with Sea Island Cotton, by S. J. Saint, M.Sc., Ph.D. Cotton Growing and Cotton Pests Control, by R. W. E. Tucker, M.A., B.Ed. The Control of *D. abbreviatus*, L. and *L. (Phytalus) smithi*, Arrow, in Barbados surveyed over a period of eleven years, by R. W. E. Tucker, M.A., B.Ed.
- Vol. 8 No. 2, April, 1939 Report on the work of the Department of Science and Agriculture for the Year Ending 31st March, 1939.
- Vol. 8 No. 3, July, 1939 The Yield of Sugar Cane in Barbados in 1939. Report on Sugar Cane Breeding and Seedling Testing for the Year 1938—39, by A. E. S. McIntosh, B.Sc., Ph.D.
- Vol. 8 No. 4, Oct., 1939 Introduction by R. W. E. Tucker, M.A., B.Ed., of Dry Area Race of *M. minense* into Barbados. The Termites of Barbados, by R. W. E. Tucker, M.A., B.Ed. *Buffo marinus*, L. in Barbados, by R. W. E. Tucker, M.A., B.Ed.
- Vol. 9 No. 1, Jan., 1940 Manurial Trials with Sugar Cane, by C. B. Johnston, B.Sc.
- Annual Report of the Department of Science and Agriculture for the Year 1940-41.
- Annual Report of the Department of Science and Agriculture for the Year 1941-42.
- Annual Report of the Department of Science and Agriculture for the Year 1942-43.
- Annual Report of the Department of Science and Agriculture for the Year Ending 31st March, 1944.
- Annual Report of the Department of Science and Agriculture for the Year 1944-45.
- Annual Report of the Department of Science and Agriculture for the Year 1945-46.
- Annual Report of the Department of Science and Agriculture for the Year 1946-47.

Pamphlets (New Series):

- No. 1, Jan., 1941 Garden Pests of Local Importance.
- No. 2, Jan., 1941 Manuring of Crops.

- No. 3 The Identification and Treatment of the Common Diseases of the Chief Vegetable Crops.
- No. 4 Compost Making.
- No. 5
(out of print) Rabbit Keeping in Barbados.
- No. 6, Aug.,
1942 The Care and Maintenance of the Milch Goat in Barbados.
- No. 7 The Growing of Food Crops.
- No. 8 Hints to Cotton Growers.
- No. 9, Oct.,
1942 The Selection and Storage of Seed Corn in Barbados.
- No. 10, Oct.,
1942 (1) Possible Means for an Efficient Use of a Large Sweet Potato Crop.
 (2) War-time Rations for Livestock.
 (3) The Storage of Sweet Potatoes in Clamps.
- No. 11, Nov.,
1942 Ways of Cooking Sweet Potatoes.
- No. 12
(out of print) Recipes for the Use of Local Foodstuffs.
- No. 13 Recipes for the Use of Cassava Flour.
- No. 14, Nov.,
1945 The Use of D.D.T. in Barbados.
- No. 15, Oct.,
1947 Contour Farming.

Bulletins (New Series) :

- No. 1. Jan.,
1944 Inventory of the Barbados Rocks and their Possible Utilization, by Alfred Senn, Ph.D.
- No. 2, Aug., 1944 The Culture of Garden Vegetables in Barbados, by D. M. Hanschell, B.Sc.
- No. 3 Notes on West Indian Hurricanes with Special Reference to Barbados, by C. C. Skeete, B.A.
- No. 4, May,
1945 Manurial Trials with Food Crops, by F. H. B. Blackburn, B.Sc.
- No. 5, Oct.,
1945 The Yield of Sugar Cane in Barbados in 1945, by C. B. Foster.
- No. 6, Jan.,
1946 Sugar Cane and its Cultivation in Barbados, by C. B. Foster.
- No. 7, July,
1946 Manurial Trials with Sugar Cane in Barbados, by F. H. B. Blackburn, B.Sc., A.R.I.C.
- No. 8, July,
1946 The Yield of Sugar Cane in Barbados in 1942, by C. B. Foster.
- No. 9 The Yield of Sugar Cane in Barbados in 1946, by C. B. Foster.
- No. 10, Aug.,
1947 The Yield of Sugar Cane in Barbados in 1947, by C. B. Foster.

British West Indies Central Sugar Cane Breeding Station.

Reports :

- Report on the British West Indies Central Sugar Cane Breeding Station for the Period Ending September 30th, 1934.
- Report for the Year Ending September 30th, 1935.

Third Annual Report Ending September 30th, 1936.
 Fourth Annual Report Ending September 30th, 1937.
 Fifth Annual Report Ending September 30th, 1938.
 Sixth Annual Report Ending September 30th, 1939.
 Seventh Annual Report Ending September 30th, 1940.
 Eighth Annual Report Ending September 30th, 1941.
 Ninth Annual Report Ending September 30th, 1942.
 Tenth Annual Report Ending September 30th, 1943.
 Eleventh Annual Report Ending September 30th, 1944.
 Twelfth Annual Report Ending September 30th, 1945.

Bulletins:

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| No. 1, Sept.,
1933 | Report on the Sugar Cane Breeding Problems of Antigua, Trinidad and St. Kitts, by A. E. S. McIntosh, B.Sc., Ph.D., Geneticist. |
| No. 2, June,
1934 | Report on the Sugar Cane Variety Problems in St. Lucia derived from a Visit during April, 1934, by A. E. S. McIntosh, B.Sc., Ph.D., Geneticist. |
| No. 3, Sept.,
1934 | Report on a Visit to Jamaica, June 1934, by A. E. S. McIntosh, B.Sc., Ph.D., Geneticist. |
| No. 4, Nov.,
1934 | Report on a Visit to Grenada, by A. E. S. McIntosh, B.Sc., Ph.D., Geneticist. |
| No. 5, Feb.,
1935 | Investigations into the Root Development of the Sugar Cane in Barbados. (1) Root Development in Several Varieties under one Environment, G. C. Stevenson, B.A., A.I.C.T.A., Assistant Botanist and A. E. S. McIntosh, B.Sc., Ph.D., Geneticist. |
| No. 6 June,
1935 | An Account of the Policy and Methods Employed in the Breeding and Initial stage of Selecting Sugar Cane Seedlings, by A. E. S. McIntosh, B.Sc., Ph.D., Geneticist. |
| No. 7, July,
1935 | Report on a Second Visit to Antigua, April 1935, by A. E. S. McIntosh, B.Sc., Ph.D., Geneticist. |
| No. 8, Aug.,
1935 | Gumming Disease Investigations in Barbados, by A. E. S. McIntosh, B.Sc., Ph.D., and G. C. Stevenson, B.A. |
| No. 9, Nov., | An Account of the Methods Employed in Testing and Selecting Sugar Cane Seedlings for Thick Cane Areas in the British West Indies, by A. E. S. McIntosh, B.Sc., Ph.D. |
| No. 10, Aug.,
1936 | The Yield of Sugar Cane in Barbados in 1936. |
| No. 11, Nov.,
1936 | Investigations into the Root Development of the Sugar Cane in Barbados. (ii) Further Observations on Root Development in Several Varieties under one Environment, by G. C. Stevenson, B.A. |
| No. 12, April,
1937 | Sugar Cane Fuzz Storage Experiments. |
| No. 13, June,
1937 | Report on a Second Visit to Grenada, April 1937, by A. E. S. McIntosh, B.Sc., Ph.D. |
| No. 14, June,
1937 | A Botanical and Agricultural Description of Recently Produced Commercial Seedlings, A. E. S. McIntosh, B.Sc., Ph.D. |
| No. 15, July,
1937 | Report on a Visit to St. Kitts and Antigua, June 1937, by A. E. S. McIntosh, B.Sc., Ph.D. |
| No. 16, July,
1937 | (i) Studies on Gumming Disease of Sugar Cane; (ii) Investigations into the Use of the Zeiss Hand Refractometer, by G. C. Stevenson, B.A. |

No. 17, Aug., 1937	The Yield of Sugar Cane in Barbados in 1937.
No. 18, June, 1938	Studies in the Use of the Zeiss Hand Refractometer. (ii) The Zeiss Hand Refractometer as an Indicator of Ripening in Sugar Cane, by A. E. S. McIntosh and G. C. Stevenson.
No. 19, Nov., 1938	Report on a Second Visit to Jamaica, October 1938, by A. E. S. McIntosh, B.Sc., Ph.D.
No. 20, Jan., 1938	The Yield of Sugar Cane in Barbados in 1938.
No. 21, Sept., 1939	The Yield of Sugar Cane in Barbados in 1939.
No. 22, Nov., 1940	Report on a Third Visit to Jamaica, October 1940, by A. E. S. McIntosh, B.Sc., Ph.D.
No. 23, Sep., 1941	The Yield of Sugar Cane in Barbados in 1940.
No. 24, July, 1942	The Yield of Sugar Cane in Barbados in 1941.
No. 25, Jan., 1944	The Yield of Sugar Cane in Barbados in 1943.
No. 26, May, 1944	A. Report on a Fourth Visit to Jamaica, January-February 1944, by A. E. S. McIntosh, B.Sc., Ph.D. B. Sugar Cane Mosaic Disease in Jamaica and Barbados, by B. deL. Inniss, B.Sc. C. Report on a Visit to Trinidad, February 1944, by A. E. S. McIntosh, B.Sc., Ph.D.
No. 27, Nov., 1944	Report on a Visit to British Guiana, July and August 1944, by A. E. S. McIntosh, B.Sc. Ph.D.
No. 28, Oct., 1944	The Yield of Sugar Cane in Barbados in 1944.
No. 29, Nov., 1947	Report on a Visit to Jamaica, September-October 1947, by B. deL. Inniss, B.Sc.

APPENDIX I.

METEOROLOGICAL OBSERVATIONS RECORDED AT THE METEOROLOGICAL STATION, CODRINGTON.

Height Above Sea Level 181 Feet.
Latitude 13° 7' 36" N. Longitude 59° 35' 57" W.

The following are the summaries of the observations recorded for the year 1947. The details are given in Appendix II.

Barometric Pressure. The records refer to observations made at the hours of 9.00 a.m. and 3.00 p.m. only and are expressed in inches of mercury. During the year 1947, the mean pressure corrected for temperature and gravity and reduced to sea level was at 9.00 a.m. 29.991 and at 3.00 p.m. 29.917, the highest pressure recorded being 30.098 on the 25th of March and the lowest 29.784 on the 28th of November. For the ten-year period 1936—1945, the average barometric pressure was at 9.00 a.m. 29.978 and at 3.00 p.m. 29.904. The highest pressure recorded at 9.00 a.m. during the ten-year period was 30.121 on the 9th of July 1940, and the lowest pressure recorded at 3.00 p.m. was 29.674 on the 13th of November, 1944.

Temperature. The daily mean maximum temperature for the year 1947 was 86.1°F. and the daily mean minimum 72.4°F. The maximum extreme for the year was 90.5°F. registered on the 21st and 26th of September and on the 2nd of October, and the minimum extreme was 65.5°F. registered on the 14th of February. The average monthly mean temperature was 79.2°F., the highest monthly range 22.0°F. and the lowest 17.0°F., the mean monthly range being 19.4°F. For the ten-year period 1936—1945, the daily mean maximum was 85.2°F. and the daily mean minimum 71.9°F. During the ten-year period the average monthly mean temperature was 78.5°F., the maximum extreme was 95.0°F. on the 21st of August, 1943, the minimum extreme 60.5°F. on the 29th of February 1944, and the average monthly range 19.0°F.

Tension of Vapour and Relative Humidity. The mean tension of vapour for the year 1947 was at 8.00 a.m., .739, and at 4.00 p.m. .699. The mean relative humidity was at 8.00 a.m. 71.4 per cent. and at 4.00 p.m. 62.5 per cent.

Wind. The daily (24 hour period) mean velocity of the wind during the year 1947 was 9.2 miles an hour. Records were kept of half-daily or twelve-hour periods from 6.00 a.m. to 6.00 p.m., and 6.00 p.m. to 6.00 a.m. The maximum velocity for any such twelve-hour period was 22.2 miles an hour, recorded between 6.00 a.m. and 6.00 p.m. on the 30th of June, and the minimum velocity 0.5 miles an hour recorded between 6.00 p.m. and 6.00 a.m. on the 26th of August, 10th and 22nd of October and the 10th of November. The average daily (24 hour period) velocity for the ten years ended 1945 was ten miles an hour.

Rainfall. The rainfall measured at the Government Meteorological Station during the year 1947 amounted to 30.97 inches. Rainfall was recorded on one hundred and forty-three days, the greatest fall being 3.74 inches on the 16th of June. For the ten-year period 1936—1945, the average total rainfall was 51.83 inches and the average number of days annually on which rain fell was one hundred and ninety-seven.

Rainfall of the Island. The average total rainfall for the year 1947 from sixty-two stations was 38.80 inches, being 20.93 inches below the average for the hundred years ended December 31st, 1946, which was 59.73 inches.

METEOROLOGICAL REPORT FOR 1947

MONTHS	Mean Pressure reduced to 32° Latitude 45° and Mean Sea Level					TEMPERATURE °F								TENSION OF VAPOUR			RELATIVE HUMIDITY			Velocity Miles per Hour	Rainfall	No. of Days on which Rain Fell
	9 a.m.	3 p.m.	Mean	Highest	Lowest	Max. Mean	Min. Mean	Max. Extreme	Min. Extreme	Mean for Month	Range for Month	Dew Point 8 a.m.	Dew Point 4 p.m.	8 a.m.	4 p.m.	Mean	8 a.m.	4 p.m.	Mean			
January ...	29.996	29.910	29.953	30.053	29.879	82.7	70.5	85.2	66.0	76.6	19.2	69.0	67.9	.708	.684	.696	77.6	70.6	74.1	10.3	2.79	22
February ...	29.998	29.915	29.956	30.061	29.856	84.5	69.6	86.0	65.5	77.0	20.5	69.6	67.4	.725	.674	.699	77.5	65.7	71.6	8.0	.41	5
March ...	30.046	29.964	30.005	30.098	29.894	86.1	70.4	87.5	67.0	78.2	20.5	65.4	63.8	.633	.612	.622	63.4	56.0	59.7	10.3	.57	9
April ...	30.032	29.960	29.996	30.093	29.914	86.1	71.8	88.0	67.0	78.9	21.0	66.4	64.4	.649	.610	.629	63.5	54.4	58.9	11.2	.50	7
May ...	30.003	29.931	29.967	30.048	29.887	86.8	73.1	88.5	69.0	79.9	19.5	67.8	67.0	.684	.664	.674	63.0	57.8	60.4	10.8	1.57	5
June ...	30.004	29.949	29.976	30.046	29.899	86.6	74.3	88.5	70.0	80.4	18.5	70.5	69.3	.750	.722	.736	70.3	64.3	67.3	12.8	5.65	13
July ...	30.007	29.956	29.982	30.078	29.889	85.7	74.3	88.5	71.5	80.0	17.0	71.8	71.2	.782	.766	.774	74.6	69.0	71.8	11.0	7.41	22
August ...	30.004	29.936	29.970	30.072	29.873	86.7	73.6	89.0	71.0	80.1	18.0	72.6	70.6	.803	.747	.775	74.9	63.0	68.9	7.7	1.77	10
September ...	29.977	29.906	29.942	30.036	29.850	88.5	74.4	90.5	71.5	81.4	19.0	72.8	70.7	.811	.752	.781	73.0	61.6	67.3	7.3	1.45	16
October ...	29.935	29.857	29.896	29.994	29.806	87.4	73.6	90.5	71.0	80.5	19.5	73.6	71.3	.829	.769	.799	75.2	65.3	70.2	6.3	3.41	14
November ...	29.938	29.850	29.894	30.001	29.784	87.2	71.3	89.5	67.5	79.2	22.0	70.5	68.3	.751	.694	.722	71.0	60.1	65.5	5.6	3.33	12
December ...	29.958	29.876	29.917	30.037	29.785	85.4	72.2	86.5	68.5	78.8	18.0	70.3	68.2	.742	.694	.718	73.3	62.7	68.0	9.2	1.71	8
TOTAL ...	359.898	359.010	359.454	360.617	358.316	1033.7	869.1	1058.2	825.5	951.0	232.7	840.3	820.1	8.867	8.388	8.625	85.73	750.5	803.7	110.5	30.97	143
AVERAGE ...	29.991	29.917	29.954	30.051	29.859	86.1	72.4	88.2	68.8	79.2	19.4	70.0	68.3	.739	.699	.719	71.4	62.5	66.9	9.2	2.58	12

APPENDIX II

3 Rainfall from January to December, 1947

April		May		June		July		August		September		October		November		December		TOTAL	
Days	Inches	Days	Inches	Days	Inches	Days	Inches	Days	Inches	Days	Inches	Days	Inches	Days	Inches	Days	Inches	Days	Inches
8	.90	6	1.33	14	5.41	19	7.40	11	1.66	15	1.88	14	3.63	11	2.47	8	1.87	137	30.74
6	1.12	4	1.07	13	4.57	17	6.57	8	1.52	12	1.88	12	4.15	8	1.85	10	1.44	115	29.22
12	2.06	8	1.33	14	9.59	22	9.98	16	3.32	18	3.95	14	5.10	13	4.68	9	2.56	163	49.16
9	1.53	5	1.53	13	6.06	21	7.49	11	1.87	15	2.12	15	5.15	12	2.55	10	1.61	147	35.33
10	1.76	7	.83	16	7.13	22	7.74	14	2.48	18	2.80	14	3.17	12	2.56	9	1.53	157	35.58
6	1.16	6	.97	11	6.02	19	6.31	10	1.71	12	1.63	13	3.97	12	2.43	9	1.23	127	30.24
9	1.60	10	1.28	18	9.14	22	9.27	14	2.68	17	3.11	19	4.25	15	3.30	12	1.76	172	41.64
6	1.15	7	.83	13	8.58	20	7.06	10	1.97	14	2.82	17	4.41	14	3.36	9	.95	138	35.05
9	1.83	10	1.20	16	8.94	24	9.21	15	3.43	17	3.73	17	5.82	16	4.80	11	3.21	175	49.24
8	1.37	6	1.00	14	7.32	24	8.88	15	3.50	17	3.32	17	6.12	11	3.76	13	3.24	154	43.91
8	1.53	7	1.39	14	10.44	24	9.66	13	2.86	16	4.17	17	8.39	15	2.82	14	5.28	171	55.46
7	.99	7	.67	13	6.54	21	7.26	13	2.70	14	2.68	14	4.35	15	2.57	10	2.89	148	35.61
4	.76	3	.77	10	.58	14	7.26	12	1.62	15	2.45	18	6.41	13	1.16	8	1.49	115	32.46
5	.91	6	.91	11	7.94	18	8.51	8	1.65	13	3.63	14	5.06	9	1.99	9	2.80	119	40.94
4	.48	7	1.53	13	7.76	16	7.30	11	2.44	11	2.96	12	3.85	9	1.71	9	1.64	120	35.03
0	1.35	8	1.51	17	8.77	24	8.31	14	2.61	18	3.29	19	4.94	16	3.32	14	2.34	181	42.59
7	1.04	5	1.18	11	7.78	21	8.24	11	1.82	16	3.16	17	5.97	13	1.89	12	3.32	142	41.47
8	.54	5	.66	10	7.02	18	7.39	10	1.76	10	1.77	16	6.95	10	1.45	9	1.78	132	34.85
6	22.08	117	19.99	241	135.59	366	143.84	216	41.60	268	51.35	279	91.69	224	48.67	185	40.94	2.613	698.52
8	1.23	7	1.11	13	7.53	20	7.99	12	2.31	15	2.85	15	5.09	13	2.70	10	2.28	145	38.80

